

AUG 04 1994

Phase (check one)	Type (check one)
<input type="checkbox"/> Initial Site Investigation	<input type="checkbox"/> Work Scope
<input type="checkbox"/> Corrective Action	<input type="checkbox"/> Technical Report
<input type="checkbox"/> Feasibility Investigation	<input type="checkbox"/> PCF Reimbursement Request
<input type="checkbox"/> Corrective Action Plan	<input type="checkbox"/> General Correspondence
<input type="checkbox"/> Corrective Action Summary	
<input type="checkbox"/> Report	
<input type="checkbox"/> Operations & Monitoring	
<input type="checkbox"/> Report	

INITIAL SITE INVESTIGATION

P&H Truck Stop
Route 302
Wells River, Vermont 03302

SMS Site # 93-1512
UST Facility # 4292141
Latitude: 44° 09' 40"
Longitude: 72° 5' 30"

Prepared for:

P & H TRUCK STOP
Nelson S. Baker, President
RR #1, Box 47B
Wells River, Vermont 05081
(802) 429-2141

Prepared by:

THE JOHNSON COMPANY, INC.
100 State Street, Suite 600
Montpelier, Vermont 05602
(802) 229-4600

THE JOHNSON COMPANY, INC.

Environmental Sciences and Engineering

August 3, 1994

Mr. Richard Spiese
Hazardous Materials Management Division
Sites Management Section
103 South Main Street
Waterbury, Vermont 05671-0404

Re: Report of a Site Investigation at the P&H Truck Stop
Wells River, Vermont
Vermont Site #93-1512

JCO #1-2349-1

Dear Richard:

We are pleased to present the following Report of a Site Investigation of petroleum releases at the P&H Truck Stop in Wells River, Vermont. We would appreciate prompt review of the enclosed documents.

Mr. Nelson Baker, owner of the P&H Truck Stop, is planning on replacing the existing underground storage tanks upon your approval of the recommended corrective action.

P & H Truck Stop requests permission from the SMS to remove and polyencapsulate gasoline contaminated soils in excess of 80 cubic yards, if necessary. A schedule which achieves the earliest remediation of the soil contamination and the most prompt replacement of the petroleum storage and dispensing systems at P & H Truck Stop will be established, pending receipt of the requested authorization from the SMS.

If you have any questions or comments regarding this letter or the enclosed documents, please do not hesitate to call either me, or Don Maynard at (802)229-4600.

Sincerely,

THE JOHNSON COMPANY, INC.

By: 

Karl H. Johnson
Senior Engineer - Project Manager

Enclosure

cc: Nelson Baker

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EXECUTIVE SUMMARY

The P&H Truck Stop (P&H) in Wells River, Vermont (Vermont Site #93-1512) has been used for the sale of gasoline and diesel fuel, and as a restaurant, since prior to 1982. At the date of this writing, there is a tire sales and truck service garage in the maintenance portion (eastern third) of the main building and there are currently four USTs in service on-site.

On September 20, 1993 two waste oil USTs were closed in-place. Two soil samples were collected during the UST closure and analyzed using EPA methods 418.1 and 8240. One sample had a photoionization detector (PID) headspace reading of 2.0 parts per million (ppm), and 11,000 ppm total petroleum hydrocarbons (TPH) were detected in the laboratory analysis. In the other sample, a PID headspace reading of 25 ppm was recorded and 170 parts per billion (ppb) xylenes were detected by the laboratory.

The on-site leak detection monitoring system indicated a potential leak from the 3,000 gallon intermediate grade unleaded UST. On October 29, 1993 the UST failed a leak test. A re-test twelve days later indicated that the UST was leaking at a rate of 1.385 gallons per hour. An investigation of the suspected gasoline release was subsequently performed by Griffin International.

A December, 1993 report of the investigation indicated that no surface water or atmospheric receptors were being impacted by the petroleum release at P&H. The report included an EPA Method 602 analysis of the on-site public water supply well water. No volatile organic compounds were detected in the water. During the investigation by Griffin, a fifty foot monitoring well was completed in the surficial aquifer directly above bedrock. PID headspace measurements in split spoon soil samples collected during drilling the well did not exceed 9.2 ppm. Five silt and/or clay aquitards were penetrated by the well, which was backfilled with native sands. The well was dry.

On the basis of the December, 1993 Griffin report, the Site was closed in January 13, 1994. The Site was re-opened on May 13, 1994 based on the receipt of the waste oil tank closure assessment by the Vermont Sites Management Section (SMS) from the UST Program. On July 21, 1994 a Site Investigation Expressway Form was sent to the SMS. A site investigation was performed by The Johnson Company, including the installation of five soils borings, and the collection and PID headspace analysis of 54 soil samples.

Based on the test borings, there are approximately 50 feet of surficial sediments below the contaminated portion of the Site. These sediments are primarily fine and medium sands interbedded with laminated silts and clays.

Three of the boring locations investigated by The Johnson Company did not contain any soils with elevated PID headspace readings. One of these borings was located as close as possible to the closed-in-place waste oil tanks USTs. The other two borings were located approximately 150-200 feet downgradient of the leaking gasoline UST. There was no odor, visual evidence of contamination, or PID measurements which indicated any contamination of the soils in these three borings.

Elevated PID readings were observed in some soils collected from the two borings closest to the leaking gasoline UST which were located approximately 60-80 feet downgradient from the location of the release. The contamination in the soils was concentrated in, or immediately above, two layers of silt and clay. One soil sample was collected from each of these two borings for laboratory analysis. The results of the GC identification analysis indicated that the release was gasoline from a relatively recent release, and the quantitative results from analysis by EPA Methods 8015 and 8020 indicate the presence of concentrations of benzene and xylenes above the Vermont Interim Soil Cleanup Guidance Limits of twenty times the Groundwater Enforcement Standards.

Based on the field observations, the petroleum contamination released from the waste oil USTs was limited in areal extent to the immediate vicinity of the tanks. Because of the high viscosity of waste oil, and the predominantly fine texture of the soils, it is likely that any significant waste oil contamination migration was prevented by natural attenuation.

The chemical analysis of the soil samples indicates that gasoline has been released to the subsurface at the Site. The likely source of this gasoline is the UST which failed the leak detection tests. Based on field observations, the vertical and horizontal migration of this gasoline has been limited by the absence of any significant aquifer, and the presence of numerous aquitards.

It does not appear that any sensitive receptors are presently impacted by the releases of petroleum products at P&H. No free product or groundwater contamination has been discovered during any of the investigations. All of the areas where soil contamination was observed are paved, so risk of direct contact with contaminated soils and the potential for volatilization of the contaminants comprising a threat to an atmospheric receptors is minimal.

Receptors that are threatened by the subsurface petroleum contamination include the groundwater in the bedrock aquifer, in addition to the wetlands and surface waters north of the site.

With the exception of the public water supply well on-site, no other water supplies were identified within 1,000 feet of the observed petroleum contaminated soils. Based on observations in bedrock monitoring wells installed on the Newbury Waste Management Property located approximately 1,000-3000 feet north of the P&H Site, groundwater flow direction in bedrock is northward and away from the water supply well, relative to the location of the soil contamination. However, the water supply well at P&H is considered a public water supply (Public, Transient, Non-community Water Supply), and the well yields approximately 30 gallons per minute or better, based on the drillers yield test. The observed area of petroleum contamination at P&H is within 200 feet of the wellhead.

The potential receiving surface water for the observed contamination at the P&H Site is an un-named tributary to the Wells River located approximately 300 feet north of any measured petroleum contamination in the soils. Except for this tributary and associated wetlands, no other sensitive environments were identified which may be receptors to the petroleum contamination.

The stratigraphy and hydrology are not conducive to in-situ remediation. Excavations are scheduled to be performed in the next thirty days to replace UST facilities and associated piping. The removal and poly-encapsulation of soils contaminated above Vermont Soil Clean-up Guidelines could be achieved cost effectively, and expeditiously, with a minimum of additional cost or delay.

1.0 INTRODUCTION

This document presents the results of a site investigation performed by The Johnson Company at the P & H Truck Stop (P&H) in Wells River, Vermont (Vermont Site #93-1512) under a contract signed by Nelson S. Baker (President of P&H) dated July 19, 1994. The subject Site is located northwest of the junction of Vermont Route 302 and Interstate 91. Please see Figure 1 for a Location Map, and Figure 2 for a Site Sketch.

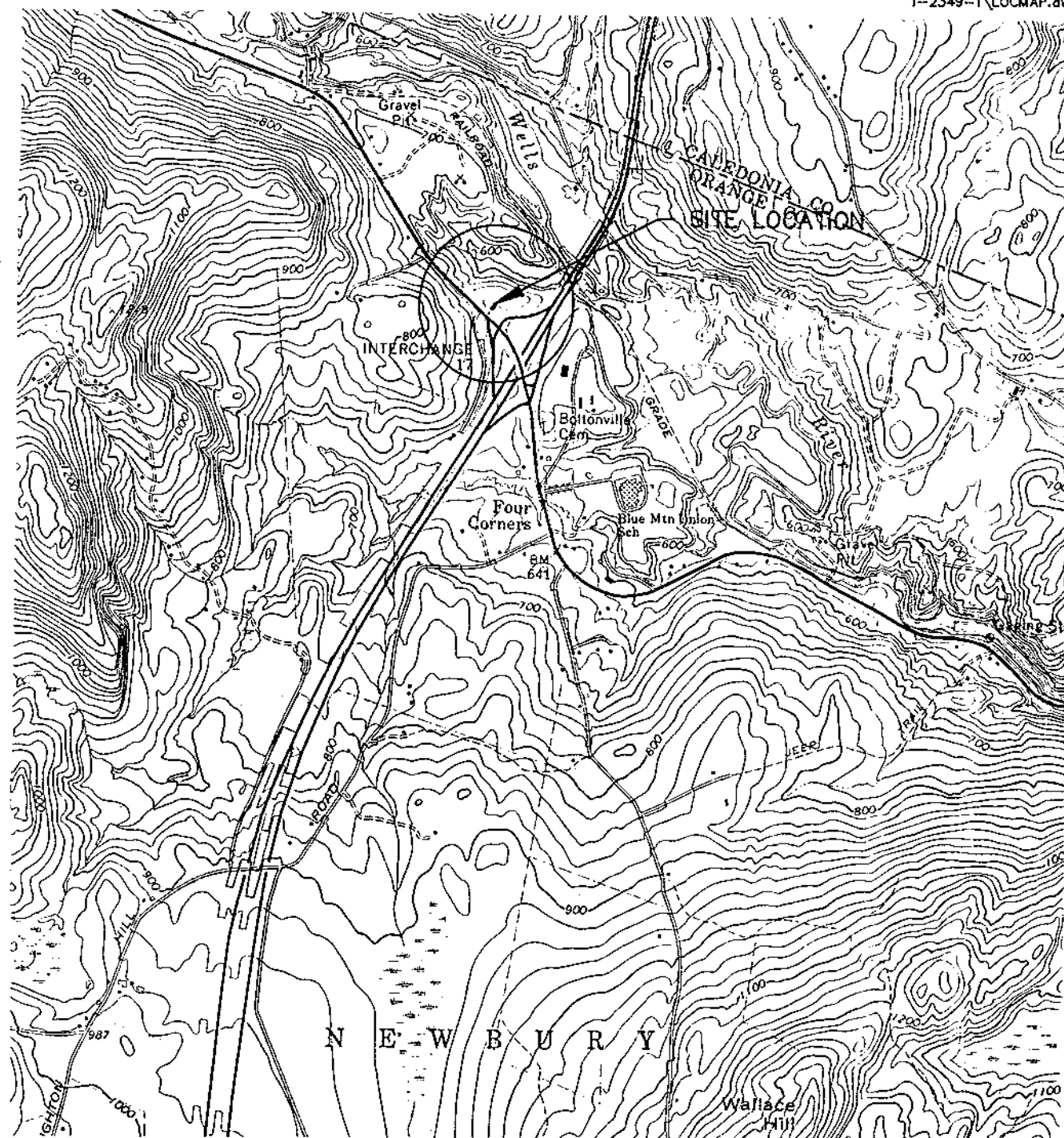
On July 21, 1994 a Site Investigation Expressway Notification was sent by facsimile to Charles Schwer, Supervisor for the Vermont Sites Management Section (SMS). This report, and the work described here-in, were prepared and conducted under the May 1994 Site Investigation Guidance Document promulgated by the SMS.

2.0 SITE HISTORY

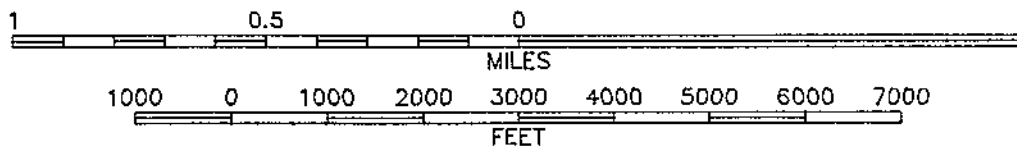
The P&H Truck Stop has been owned and operated by Nelson Baker since 1984 as a retail outlet of gasoline and diesel fuel, and also includes a restaurant. Philip Boudreau currently operates a tire sales and truck service garage in the maintenance portion (eastern third) of the main building. The property includes 8 acres of land. Five acres was purchased by Mr. Baker in 1984, and three additional acres to the west of the site were purchase from Delbert Leete at a later date. The Bradford Oil Company of Bradford, Vermont owned and operated the facility between 1982 and 1984. Prior to 1982 the property was owned by Delbert Leete of Wells River, Vermont. Mr. Leete sold gasoline and diesel fuel, and operated a small diner.

2.1 CONFIRMED WASTE OIL RELEASE

On September 20, 1993 two waste oil USTs were closed in-place under the direction of Bruce Cox (Dufresne-Henry Inc. of North Springfield, Vermont). One UST (#7 on Figure 2) had a capacity of 1,000 gallons and the other waste oil UST (#6 on Figure 2) had a 4,000 gallon capacity. UST #7 contained 40 gallons of oil on September 20, 1993, according to the UniForm Hazardous Waste Manifest, and UST #6 was "dry" (Cox, 9/22/93). The UST closure was performed by Lee's Oil Service of Bath, New Hampshire. Both tanks were in good shape, with no visible holes. Copies of the Dufresne-Henry, Inc. Tank Closure Assessment memorandum and the Uniform Hazardous Waste Manifest are included in Attachment 1 for reference.



NORTH



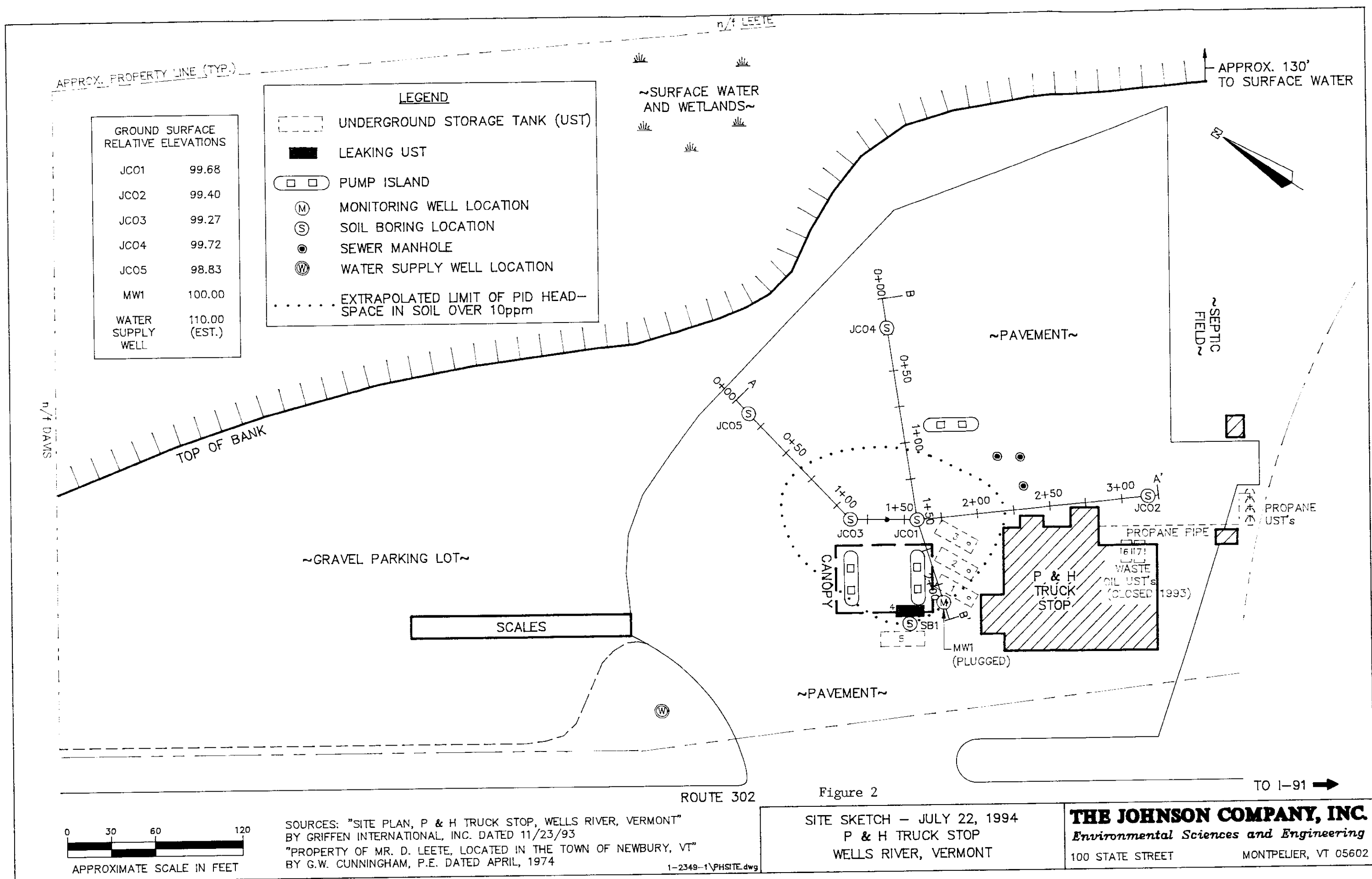
CONTOUR INTERVAL 20 FEET

MAP
LOCATION

BASE MAP: USGS 7.5 Minute Topographic Quadrangle WOODSVILLE, VT.-N.H. PHOTOREVISED 1988

FIGURE 1 : Site Location Map
P & H TRUCK STOP
WELLS RIVER, VERMONT

THE JOHNSON COMPANY, INC.
Environmental Sciences and Engineering
100 STATE STREET MONTPELIER, VT 05602



Two soil samples were collected during the UST closure and analyzed by Eastern Analytical of Concord, New Hampshire using EPA Methods 418.1 and 8240. In sample SS-2 from 4" beneath the 1000 gallon tank, a photoionization detector (PID) headspace reading of 2.0 parts per million (ppm) was obtained and the laboratory reported that 11,000 ppm total petroleum hydrocarbons (TPH) were detected. In the other sample, SS-4 from 4" below the 4,000 gallon tank, a PID headspace reading of 25 ppm was recorded, and the laboratory report states that 170 parts per billion (ppb) xylenes were detected. No other compounds are reported as present in either sample. Please see Attachment 2 for copies of the Laboratory Analytical Reports on the soils samples from beneath the closed-in-place waste oil tanks.

2.2 CONFIRMED GASOLINE RELEASE

On October 29, 1993 a 3,000 gallon special unleaded UST (UST #4 on Figure 2) failed a leak test performed by Jaworski Geotech Inc. of White River Junction, Vermont. The tank was isolated from the pipes and pumps and re-tested by Jaworski twelve days later on November 11, 1993. The results of this second test (copy included in Attachment 3) indicated that the tank was leaking at a maximum rate of 1.385 gallons per hour under two pounds per square inch test pressure (Verrier, 11/93).

According to Nelson Baker, the contents of the 3,000 gallon tank were removed in the interim between tests, and the tank was re-filled for the test on 11 November. Following the failure of the tank re-test, the contents were removed again.

An investigation of the suspected gasoline release was performed by Griffin International of Williston, Vermont on November 22, 1993, and the report on these investigation was issued in December, 1993. (The tank numbering system used by Griffin did not correspond to the numbering system used in the UST permit. The UST Permit numbering system is the numbering system used in this report.)

The December, 1993 Griffin investigation included the installation of a fifty foot deep monitoring well near UST #4. Five separate silt or clay aquitards were penetrated during the installation of this well. Elevated PID headspace measurements up to 9.2 ppm were observed in, or directly above each of these impeding layers. The well was constructed of two inch diameter Schedule 40 PVC with a ten foot well screen installed in the bottom of the well. One bentonite plug was placed near the ground surface, and a second at approximately 35-37 feet below ground surface, just above the screened interval. The remainder of the borehole was backfilled with silica sand or native material (primarily fine and medium sand). The well never contained water (Reed, 12/93). Griffin reported in their December 1993 report that they had obtained no sample from MW-1 due to the lack of water in the well, however, the report also states that the "analysis of the sample from MW-1 indicated no detectable compounds".

Griffin obtained a sample from the on-site water supply (a 30 gallon per minute, 260 foot deep bedrock well) and had it analyzed using EPA Method 602. The laboratory analysis of this sample did not detect any contaminants in the water supply well. A copy of the well log for the Water Supply Well appears in Attachment 4.

2.3 VT SMS SITE # 93-1512

On the basis of the December, 1993 Griffin report, the Site was closed by a January 13, 1994 letter to Nelson Baker from George Desch, Chief of the Sites Management Section (SMS). The Site was re-opened by letter dated May 13, 1994 to Nelson Baker from Charles Schwer, Supervisor of the SMS, based on the receipt of the waste oil tank removal results by the SMS from the UST Program. A copy of the May 13 letter from Mr. Chuck Schwer appears in Attachment 5.

A work plan for the Assessment of Residual Petroleum was prepared by Griffin for Nelson Baker and submitted to the SMS on May 25, 1994. This work plan was approved by the SMS in a June 7, 1994 letter from Charles Schwer to Nelson Baker.

A review of the site and the investigations performed by others was commenced by The Johnson Company on July 16, 1994, at the request of Nelson S. Baker. Upon review, the information contained in the previous submittals to the SMS indicated that two separate releases had been confirmed: 1) Petroleum contamination was indicated in the soils beneath the location of the closed-in-place waste oil tanks at the eastern end of the facility; and, 2) a release of petroleum product was also indicated from the intermediate grade gasoline tank (UST # 4). This UST is located in close proximity to the eastern of the two current pump islands that is immediately adjacent to the front entrance (see Figure 2). On the basis of these findings, investigations of both of the confirmed releases on the site were subsequently initiated, and on July 21, 1994 a Site Investigation Expressway Form for the P&H Truck Stop Site was sent by facsimile to Charles Schwer from Donald M. Maynard of The Johnson Company, Inc. A copy of the Expressway Form is included in Attachment 6).

3.0 SITE INVESTIGATIONS

The tasks performed by Mr. Maynard on July 20 and 21, 1994 included the closure of the monitoring well previously installed by Griffin, the advancement of 5 soils borings, and the collection and PID headspace analysis of fifty-four (54) soil samples. (The locations of the soil borings are shown on the Site Sketch.) Field inspections were conducted to ascertain the relative potential risk to sensitive receptors.

3.1 GEOLOGY AND HYDROGEOLOGY

The ground surface elevation at the Site is approximately 660 feet above sea level based on the 1988 photo-revised United States Geological Survey (USGS) topographic map of the Woodsville, Vermont quadrangle. The Site is underlain by soils of the Windsor Fine Sandy Loam. The Site is approximately 2,000 feet south of a closed, seven acre, unlined sanitary landfill owned by Cassella Waste Management (Newbury Waste Management, Inc. 7/92). The Site is separated from the landfill by a 70+ foot deep ravine.

Based on the test borings, there are approximately 50 feet of surficial sediments below the contaminated portion of the Site. These sediments include fine and medium sands interbedded with laminated silts and clays. The laboratory measured vertical hydraulic conductivity of a silt and clay Shelby tube sample collected near the Newbury Landfill was 8.79×10^{-4} fpd (NWM, 7/92). The mean horizontal hydraulic conductivity as measured in similar sands near the Newbury Landfill was 0.11 fpd (NWM, 7/92). The silt and clay soils appear to be laterally continuous over distances of 100 feet or more. They are generally horizontal or gently dipping. The thickness of each silt and clay unit is generally less than one foot, however they typically occur in groups of two or more layers.

The surficial materials at the Site were deposited in lakes formed during the retreat of the Wisconsin Glaciation. A series of ice dams and terminal moraines in the Connecticut River Valley formed high elevation lakes in the Wells River Valley. After the erosion of the moraines, or the final melting of the ice dams, the deposits at the site were dissected by tributaries to the Wells River.

Although some soils collected during the test borings were saturated, these wet soils were always associated with relatively thick (greater than six inches) silt and clay horizons. The total saturated thickness in and above any silt and clay horizon did not exceed two feet. On several occasions, drilling was halted for 10-15 minutes to allow the water to enter the borehole. These attempts to collect the groundwater were unsuccessful.

A monitoring well was installed near the bedrock surface on November 22, 1993 under the direction of Griffin International (Reed, 12/93). This well was dry in November, 1993 and also on July 20, 1994. Based on these observations, it is likely that the moisture observed in the split spoon samples is near or at the maximum moisture retention capacity of the soil. It is possible that groundwater in the surficial aquifer flows in a thin layer on top of the silt and clay or bedrock surfaces, and its direction is controlled by the aquitard and bedrock surface topography. However, since the Site is almost completely

covered with asphalt, very little recharge to (and very little flow in) the potential surficial aquifers is likely to occur. A perched groundwater aquifer was observed between 610-625 feet above sea level during the Newbury Landfill investigations. However, the landfill has an unpaved, and comparatively large, recharge area.

A coarse grained unit consisting of gravel and sand and cobbles was observed below the lacustrine sands and silty clays at the Newbury Landfill (NWM, 7/92). This unit was not seen in the soil borings drilled at the P&H Truck Stop Site. However, the well log for the P&H Truck Stop water supply well describes twenty feet of "sand, clay, gravel, boulders" over rock (Attachment 4.)

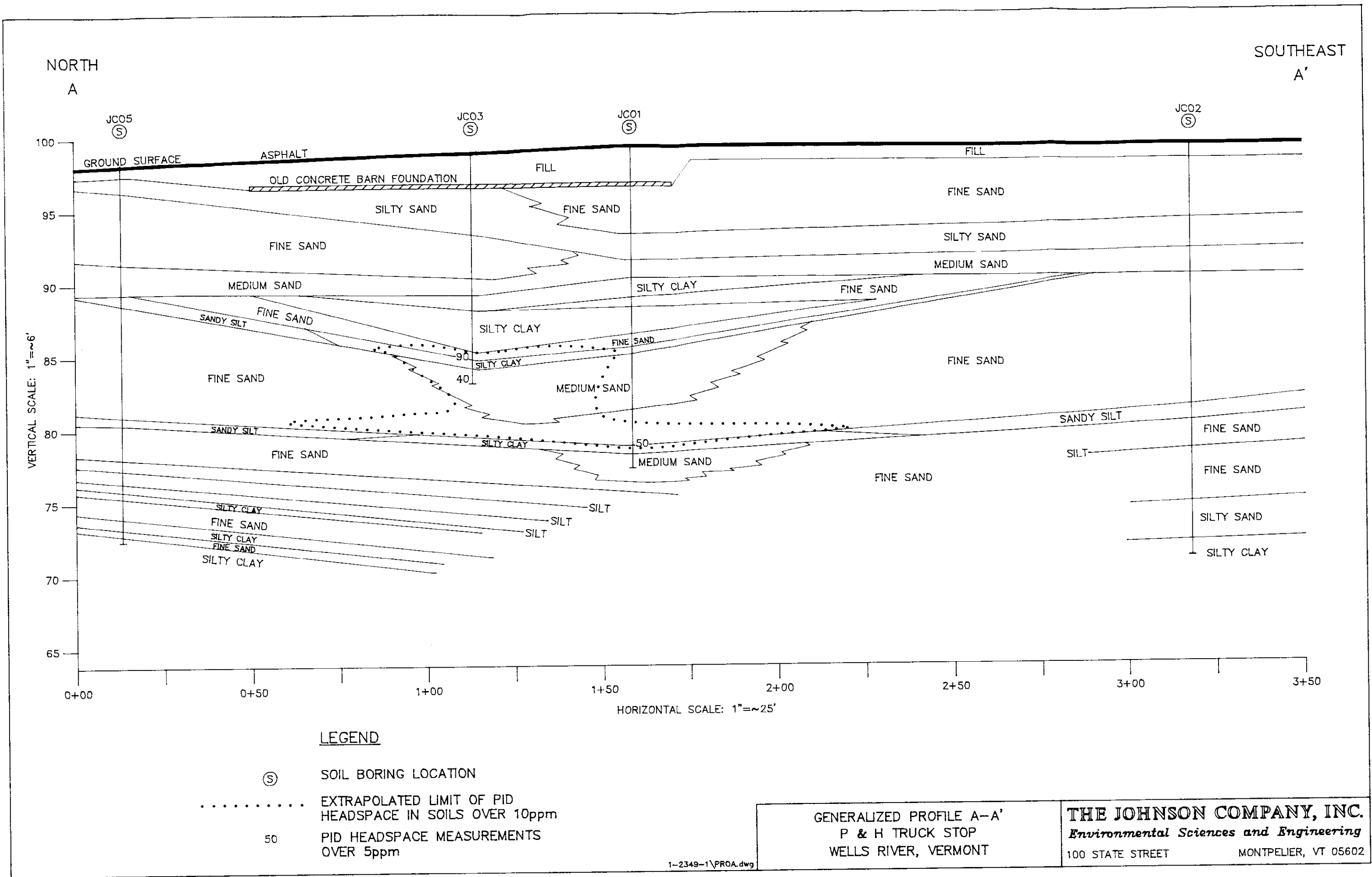
The bedrock under the site is phyllite and quartzite of the Albee Formation (Ordovician in age). The groundwater flow velocity in the shallow bedrock aquifer 1,000-3,000 feet north of the Site was estimated to be 0.4 feet per day (fpd)(NWM, 7/92).

3.2 CLOSURE OF MW-1

The dry monitoring well installed by Green Mountain Boring of Barre, Vermont under the direction of Griffin International was removed, and the entire length of the borehole was plugged with bentonite by Great Works Test Boring of South Berwick, Maine under the supervision of The Johnson Company, Inc. Since the well penetrated numerous confining layers, and did not have sufficient bentonite seals installed during its construction, it presented a possible pathway for vertical contaminant migration. A copy of the Griffin well log for MW-1 is included for reference in Attachment 7.

3.3 SOIL SCREENING AND ANALYSES

The five soil borings conducted under this scope were advanced using a hollow stem auger. Soil samples were obtained from split spoon samples for screening in the field with a calibrated photoionization detector (PID). The soil samples to be screened were placed into a re-closeable plastic bag and allowed to equilibrate. The headspace in the bag was then assayed using the PID, and the highest sustained reading was recorded. The soil horizons were logged from the split spoons. Detailed descriptions of the soils using the modified Burmeister classification methods and the PID readings obtained are included on the drilling logs in Attachment 8. Generalized geologic profiles of the Site are presented as Figures 4 and 5.



NORTHEAST

SOUTHWEST
B'**LEGEND**

(S)

SOIL BORING LOCATION

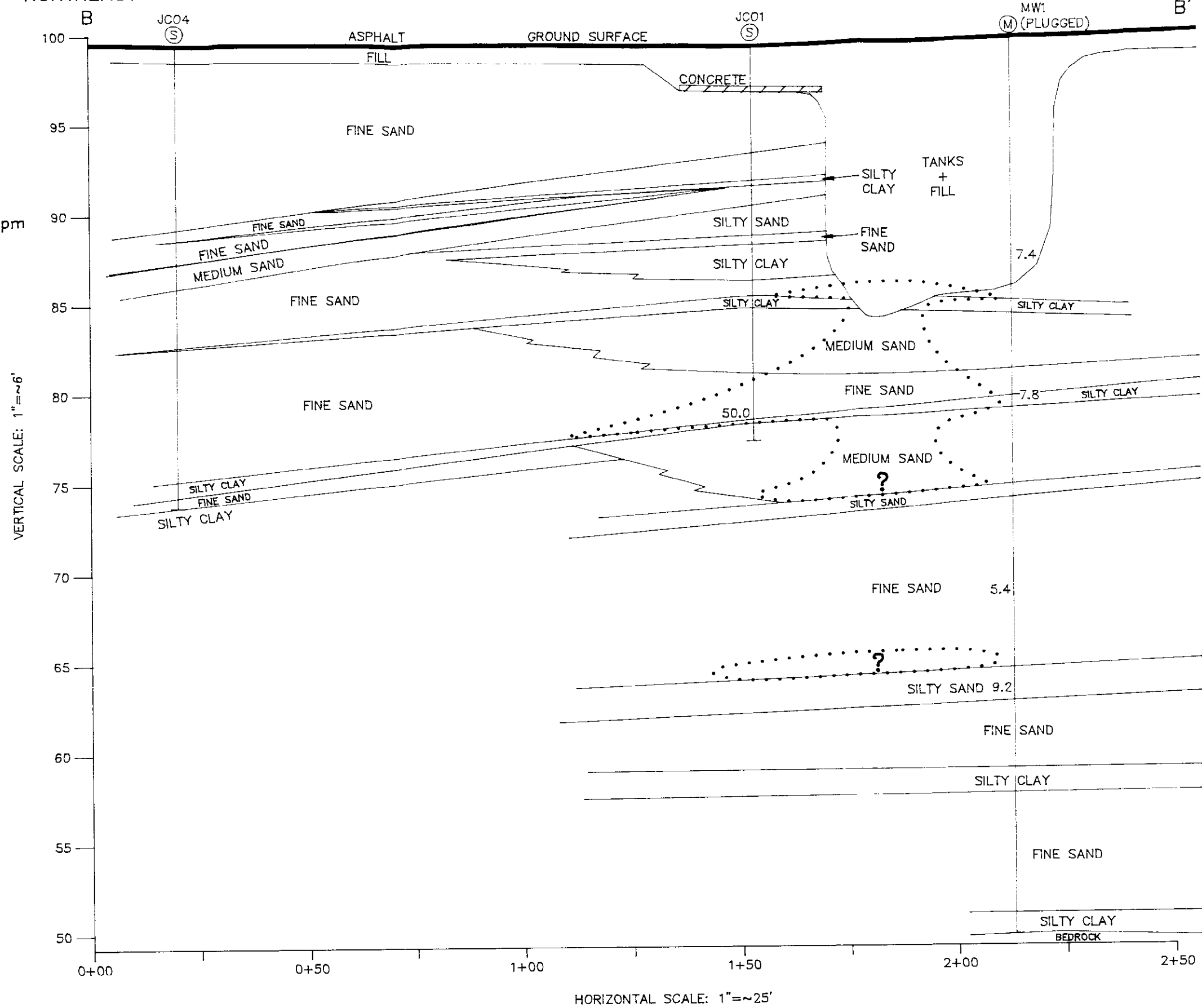
(M)

MONITORING WELL LOCATION

.....

EXTRAPOLATED LIMIT OF PID
HEADSPACE IN SOILS OVER 10ppm

7.8

PID HEADSPACE MEASUREMENT
OVER 5ppm

GENERALIZED PROFILE B-B'
P & H TRUCK STOP
WELLS RIVER, VERMONT

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100 STATE STREET MONTPELIER, VT 05602

4.0 FINDINGS

4.1 WASTE OIL RELEASE

The soil boring advanced adjacent to the waste oil tank location (JCO-2) did not yield any soil samples that resulted in PID readings above background levels. This location was approximately 30 feet from the tanks due to the presence of underground propane gas lines and unidentified subsurface magnetic anomalies. No odors of petroleum origin were detected, and no visual signs of contaminant migration were observed.

4.2 GASOLINE RELEASE

A total of four soil borings were advanced in order to determine the degree and extent of contamination resulting from the confirmed release of gasoline from the intermediate grade unleaded tank (Figure 2).

Field screening of soil samples from these borings using a PID indicated that the release of petroleum product has migrated in a northward direction from the UST with the confirmed leak. The table below presents the maximum PID readings above 10 parts per million (ppm) from the soil borings in the area of the gasoline release. The soils with elevated readings were all collected near the north end of the dispensing pump islands, approximately 60-80 feet from UST #4. The contamination in the soils was concentrated in, or immediately above, layers of silt and/or clay. Soils descriptions and other pertinent observations, including PID readings are included on the drilling logs appearing in Attachment 8.

TABLE 1 Maximum PID Readings Above 10 ppm	
Sample Location ID (Depth bgs)	Maximum PID Reading (above 10 ppm)
JCO-1 (19-21)	50.0
JCO-3 (14-16)	90.0
bgs = below ground surface	

A representation of the estimated areal extent of the soils which indicated PID readings above 10 parts per million (ppm) is presented on the site plan.

Two soil samples were submitted to Friedman and Bruya, Inc., of Seattle, Washington for laboratory analysis by gas chromatograph in order to identify of the source of the contaminants detected in the field screening of the soil samples. Both samples had an odor. The product present in both samples was identified as gasoline.

The sample from JCO-1 had a PID field headspace reading of 50 ppm, however MTBE was the only contaminant reported as present above the laboratory detection limits. The sample from JCO-3 had a PID headspace reading of 90 ppm, and contained BTEX. A summary of the laboratory reported results appears in Table 2, below. Copies of the laboratory analytical reports are included in Attachment 9.

TABLE 2
LABORATORY REPORTED RESULTS FROM THE ANALYSIS OF SOIL SAMPLES
P & H TRUCK STOP, WELLS RIVER, VERMONT
 Analyzed by EPA Method 8020 and 8015
 All results in parts per billion (ppb) unless otherwise noted

Well ID	Compound	GES x 20	7/20/94
JCO1-19-21	MTBE	-----	1,500 ¹
	Gasoline	-----	<1,000
	Benzene	100	<20
	Toluene	48,400	<20
	Ethylbenzene	13,600	<20
	Xylenes	800	<40
JCO3-14-15	MTBE	-----	1,500
	Gasoline	-----	170,000
	Benzene	100	3,100*
	Toluene	48,400	11,000
	Ethylbenzene	13,600	3,200
	Xylenes	800	18,000*
JCO3-14-15 (Duplicate)	MTBE	-----	1,600
	Gasoline	-----	370,000
	Benzene	100	4,800*
	Toluene	48,400	23,000
	Ethylbenzene	13,600	7,300
	Xylenes	800	42,000*
¹ Laboratory unable to confirm due to interfering compound on the FID trace. The sample was calculated from the PID trace.			
* Indicates laboratory reported concentrations in excess of twenty times the State of Vermont Groundwater Enforcement Standard for the referenced compound			

4.3 SURVEY OF SENSITIVE RECEPTORS

No sensitive receptor was identified that is imminently at risk from the documented release of petroleum products from either the waste oil tanks or the intermediate gasoline UST. The waste oil contamination has not migrated to the location of the soil boring identified as JCO-2, and on the basis of these investigations the waste oil contamination presents no risk to any potential receptor. The gasoline release has migrated through the soils from the location of the release, towards the surface water to the north of the site. However, no groundwater was encountered during these investigations, or those conducted previously by Griffin. The estimated limit of contaminant migration is shown on Figure 2. Receptors that are threatened by the subsurface petroleum contamination include the groundwater in the bedrock aquifer, in addition to the wetlands and surface waters north of the site.

4.3.1 Water Supplies

With the exception of the water supply well on-site, no other water supplies were identified within 1,000 feet of the observed petroleum contaminated soils. Groundwater flow in the bedrock aquifer is primarily towards the northwest, and the Wells River, based on observations in monitoring wells installed on the Newbury Waste Management Property, 1,000-3000 feet north of the Site.

The on-site water supply well is classified as a public water supply based on its use in the restaurant at the P&H Truck Stop. The well is 260 feet deep, and encountered grey bedrock at 20 feet below ground surface. The well has 61 feet of casing, and has a drillers yield of 30 gallons per minute (Attachment 4). A lineament in the ground surface south of Route 302 which may indicate a bedrock fracture was observed on the USGS topographic map. This lineament extends approximately a mile sub-parallel to Route 302 in the northwest/southeast direction. Based on observations in bedrock monitoring wells installed on the Newbury Waste Management property located approximately 1,000-3000 feet north of the P&H Site, groundwater flow direction in bedrock is northward and away from the water supply well, relative to the location of the soil contamination.

However, the water supply well at P&H is considered a public water supply (Public, Transient, Non-community Water Supply), and the observed area of petroleum contamination at P&H is within 200 feet of the wellhead.

A sample of the well water was collected by Griffin International on November 29, 1993. The sample was analyzed by Endyne of Williston, Vermont using EPA Method 602. No benzene, toluene, ethylbenzene, xylenes, or methyl-tert-butyl-ether (BTEX or MTBE) were detected in the water sample and BTEX and MTBE are among the most mobile components of gasoline in groundwater, so if contamination was threatening the water supply well, some evidence of the lead edge of a contaminant plume might be

expected in the form of detection of one or more of these compounds. Based on the analytical results, the observed extent of contamination in the soils, and the presence of numerous silt and clay aquitards, it is not likely that the on-site water supply has, or will be, contaminated at detectable levels from the observed petroleum contamination.

4.3.2 Surface Waters and Wetlands

The potential receiving waters for the observed contamination at the Site is an un-named tributary to the Wells River. The tributary and its associated wetlands are approximately 300 feet from any measured petroleum contamination in the soils. The confluence of the un-named tributary and the Wells River is approximately 1,000 feet downstream from the Site. The water elevation of the tributary at the Site is approximately 70 feet below the ground surface at the UST locations. No petroleum odor or sheen was noted in the surface water on November 22, 1993 (Griffin 12/93).

Except for the tributary and wetlands described above, no sensitive environments were identified which may be receptors to the petroleum contamination.

4.3.3 Atmospheric Receptors

During the site investigation, some potential receptors of atmospheric contamination were identified and evaluated. This included measurement of volatile organic compound (VOC) with a photoionization detector (PID) in and near the main building.

No elevated levels of VOC were detected in the atmosphere on the Site except during the pumping of petroleum into vehicles or in the test bore holes themselves. The basement of the P&H Truck Stop did not have any elevated levels of VOC as measured with a PID on November 22, 1993 (Reed, 12/93).

All of the areas where soil contamination was observed are paved. Based on the data presented above, it is extremely unlikely that any sensitive atmospheric receptor is, or will be, measurably impacted by the observed petroleum contamination.

5.0 LIMITATIONS

The conclusions presented here are arrived at through consideration of the findings of this investigation as presented herein. Consideration was given to the information gathered during the site inspection and investigations, the field screening results of environmental samples, and through interpretation of laboratory analytical data. A diligent effort was made to identify areas of concern that may have been indicated from the conditions described above. While as much of the property as practical

was assessed during this investigation, the paved area of the site and the steep embankment on the northern side of the property leaves the possibility that some areas of contamination may have been missed.

This investigation was based on sound scientific investigative techniques and experience with similar investigations. However, the conclusions of this investigation are limited by the sources of data, as stated above, and the conclusions and recommendations must be considered within this context. The status of the site may change, and additional information may become available in the future which will require modification or updating of the conclusions and recommendations presented here. If conditions are found to vary from those presented here, supplemental conclusions and recommendations may also be warranted.

6.0 CONCLUSIONS

Based on the field observations, including the visual inspection for contamination and the PID headspace analysis, the petroleum contamination released from the waste oil USTs was limited in areal extent. Because of the high viscosity of waste oil, and the fine texture of the predominant soils, it is likely that any waste oil contamination migration was limited by natural attenuation. No evidence of waste oil migration was observed during this site investigation.

The chemical analysis of the soil samples from JCO-1 and JCO-3 indicate that gasoline has been released to the subsurface at the Site. The likely source of this gasoline is UST #4 based on the leak detection and analytical results. Based on the soil boring and PID headspace results, the vertical and horizontal migration of this gasoline has been limited by the absence of any significant aquifer, and the presence of numerous aquitards.

The release from the intermediate grade gasoline tank has migrated above impeding layers in unsaturated soils, and has contaminated soils a distance of 100 - 150 feet from the location of the release, based on the results of this investigation. No groundwater was observed in the unconsolidated deposits during the scope of these, or previous investigations. No evidence of contamination of groundwater has been discovered.

7.0 RECOMMENDATIONS

The Johnson Company, Inc. recommends that soils contaminated with gasoline in excess of 20 parts per million (ppm) be removed from the sub-surface, during scheduled construction activities and polyencapsulated on-site.

7.1 NEED FOR CORRECTIVE ACTION

The migration of contaminants from a confirmed release of petroleum products has occurred in unsaturated soils. Based on the findings and conclusions presented above, we find that a threat to a sensitive environment (the wetlands and surface water to the north of the area of the release) exists, although it is not likely to be imminent. We also find that a potential threat exists to a public water supply due to the location of the area of the release within 200 feet of the well head.

Threats to sensitive receptors exist, however, the risk is minimal based on the findings of this investigation. Remediation should be accomplished to remove the residual source of contamination now extant in the soils, thereby relieving the threat of further migration.

7.2 REMEDIAL METHODOLOGY (Plan for Corrective Action)

The site stratigraphy and geology are not conducive to in situ remediation. Construction activities are currently contemplated for late August-early September 1994 to replace the UST facilities and associated piping at P & H Truck Stop. The remediation of the petroleum contamination should be accomplished during the scheduled replacement of the tanks and piping facilities. Soils that are above 20 ppm and less than 100 ppm will be segregated from those between 100 ppm and one thousand (1000) ppm. Any soil contamination found to be in excess of 1000 ppm will be handled in accordance with the "Agency Guidelines for Petroleum Contaminated Soil and Carbon Media".

Soils removed during the process of replacing tanks and piping that have levels of VOC indicated by a PID field headspace assay of less than 20 ppm will be left in place. Soils with PID readings above 20 ppm and below 1000 ppm will be located, and segregated as described above, in an approved area of the property and polyencapsulated with clear plastic a minimum of 6 mils thick. The polyencapsulated soils will remain under protective covering, and will be monitored periodically until the levels of contamination have dissipated sufficiently to allow final disposition, or until alternative approved remedial measures are initiated to effect final disposition of the contaminated soils.

7.3 SCHEDULE FOR WORK

The proposed remedial action can proceed to be scheduled as soon as approval of this corrective action is received from the SMS. The owner is ready, and anxious to proceed. Some lead time is anticipated for the purposes of financing, receiving materials, and scheduling with the contractor. If the SMS responds to this report and the proposal for corrective actions affirmatively, the remediation can proceed beginning within approximately 30 days (or less) of authorization to proceed. Every attempt will be made to effect this remediation beginning in early September 1994.

8.0 REFERENCES

The references are presented below in chronological order to facilitate an understanding of the Site history.

Newbury Waste Management, Inc. and Dufresne-Henry, Inc. July 10, 1992. Application for Interim Certification, Newbury Waste Management, Inc. Phase I Lined Landfill.

Cox, B. H. of Dufresne-Henry, Inc. September 20, 1993. Letter to Marc Coleman, HMMD, re: Tank Closure Submittal.

Cox, B. H. of Dufresne-Henry, Inc. September 20, 1993. Letter to Nelson Baker, re: Tank Closure Submittal and Tank Closure Form.

Cox, B. H. of Dufresne-Henry, Inc. September 22, 1993. Facsimile to Marc Coleman, HMMD, re: Site Observations during Tank Closure.

Brunkhorst, William of Eastern Analytical, Inc. October 17, 1993. Letter to Bruce Cox re: Laboratory Report for Soil Samples collected during Waste Oil Tank Closure.

Verrier, R. G. of Jaworski Geotech, Inc. November 15, 1993. Letter to Nelson Baker, re: Results of retest of 3,000 gallon special unleaded gasoline UST.

Murrey, P. M. of Griffin International Inc. November 19, 1993. Letter to Chuck Schwer, re: Site Assessment.

Reed, L. T. of Griffin International Inc. December 23, 1993. Letter to Nelson Baker re: Report of Investigation of Subsurface Petroleum Contamination.

Desch, George, Chief of the Vermont Sites Management Section. January 13, 1994. Letter to Nelson Baker, re: Site closure in respect to a release from the special unleaded gasoline UST.

Schwer, Chuck, Supervisor of the Sites Management Section. May 13, 1994. Letter to Nelson Baker, re: Request for additional work in respect to in-place closure of waste oil USTs.

Reed, L. T. of Griffin International Inc. May 25, 1994. Letter to Nelson Baker re: Work Plan and Cost Estimate for the Assessment of Residual Petroleum at P&H Truck Stop.

Schwer, Chuck, Supervisor of the Sites Management Section. June 7, 1994. Letter to Nelson Baker, re: Approval of May 25, 1994 Work Plan.

Maynard, D. M. of The Johnson Company, Inc. July 21, 1994. Facsimile to Chuck Schwer, SMS re: Site Investigation Expressway Notification Form.

ATTACHMENT 1

**Dufresne-Henry, Inc. Tank Closure Assessment
and Uniform Hazardous Waste Manifest**

DUFRESNE-HENRY, INC.

MEMO TO: File 413038-9315

FROM: Bruce Cox

DATE: September 22, 1993

SUBJECT: P & H Truck Stop; Wells River, VT
Tank Closure Assessment

On September 20, 1993 I was on site at the P & H Truck Stop in Newbury, Vermont for a tank closure assessment of two (2) waste oil underground storage tanks. One tank was 1,000 gallons the other was 4,000 gallons. I arrived on site at 9:28 am. Weather at the time of the inspection was clear with temperatures in the 40's and 50's. The contractor, Lee's Oil Service, Inc. (LOS) was already on site. LOS had excavated the northerly ends of the tanks and was cutting access holes for cleaning at the time of my arrival. The calibration of the HNU PI-101 (10.2 eV lamp, calibrated with isobutylene) was checked at 10:25 am.

The P & H Truck Stop is located on Vt Rte 302 just west of I-91 in Newbury, Vermont. The site consists of a restaurant with trucker facilities, fueling islands, and a large paved parking lot. The DEC Facility Registration Number is 4292141. There are five (5) permitted UST's at the facility. The well serving the site (considered a public water supply) is located south of the truck stop on the other side of Rte 302. The well is reported to be deep.

The subject tanks are located on the north side of the northeasterly corner of the building. They are situated in front of a large single bay garage. There is a large floor drain located in the central portion of the garage. Specifics of the construction and discharge point(s) are not known. The 1,000 gallon tank is the eastern-most and the 4,000 gallon tank is the western-most. The tanks are immediately adjacent to each other. The fillers were in the parking lot. The tops of both tanks were about 4 feet below ground level and each projects about 4 feet into the parking lot. The remainder of each tank is under the garage floor slab. The building frost wall appeared to have been cast in place directly on top of the tanks. The age of the tanks is not known but estimated by the owner to be about 12 years.

Marc Coleman of the VT HMMD was contacted regarding the location of the tanks and the need for abandoning in place. We discussed the need for soil and groundwater samples. I said I would sample as conditions allowed with the understanding that monitoring wells might need to be installed.

Approximately 35 gallons of product was removed from the 1,000 gallon tank prior to cleaning by LOS. Approximately 5 more gallons were vacuumed during cleaning operations. The wastes were transported off site by LOS. The interior of the tank was washed with diesel fuel. The interior of the tank showed very minor rusting and pitting. The exterior was slightly rusty with minor pitting. The overall condition of the tank was good. As the tank had to be abandoned in place, a hole was cut through the bottom of the southerly end. Two discrete soil samples were obtained at 10:35 am; SS-1 from immediately under the tank and SS-2 from approximately 4" below the tank. Both samples were kept refrigerated while on site. Polybag headspace readings of 2 ppm were observed from each sample. No odor or staining was observed in either sample.

Sticking the 4,000 gallon tank prior to the start of work had revealed no product. When opened for cleaning the interior was found to be dry and dusty with only a very faint odor. The tank appeared to have not been used for an extended period of time. The interior was not rusted or pitted. The exterior of the tank was slightly rusty with minor pitting. The overall condition of the tank was good. As the tank had to be abandoned in place, a hole was cut through the bottom of the southerly end. Two discrete soil samples were obtained at 10:55 am; SS-3 from immediately under the tank and SS-4 from approximately 4" below the tank. Both samples were kept refrigerated while on site. Polybag headspace readings of 12 ppm were observed from the shallow sample and 25 ppm from the deeper sample. Neither sample appeared to be stained but an oily odor was observed.

The excavation was deepened immediately in front of the northerly end of the tanks to a depth sufficient to reach the tank beds. Discrete soil samples SS-5 and SS-6 were obtained at 11:12 am from below the 4,000 gallon tank. Polybag headspace readings of .2 ppm were observed. Discrete soil samples SS-7 and SS-8 were obtained at 11:20 am from below the 1,000 gallon tank. Polybag headspace readings of 0 ppm were observed from both samples. No odor or staining was noted in any of the samples. No groundwater was encountered. Groundwater is expected to be at a significantly greater depth.

Both tanks were abandoned in place by filling with grout starting at 12:00 noon. The grout was supplied by Lawrence SANGRAVCO of St. Johnsbury, VT.

I left the site at 12:40 pm. The LOS crew was still on site awaiting the arrival of the second truck to complete filling the 4,000 gallon tank.

Addendum 9/22/93

I contacted Marc Coleman of the VT HMMD this morning concerning what soil samples the State would like to see analyzed. It was decided that only the contaminated samples needed to be run. A sample from the southerly end of each tank was chosen; SS-2 from the 1,000 gallon tank and SS-4 from the 4,000 gallon tank. The samples were sent to Eastern Analytical of Concord, NH via overnight service on Sept 22, 1993. Analyses requested were BTEX by EPA Method 8240 and TPH by EPA Method 418.1 for each sample.



DEPARTMENT OF ENVIRONMENTAL PROTECTION
Hazardous Waste MANIFEST PROGRAM, State Office Building
Hartford, CT 06106

FOR STATE USE ONLY

Please type (or print) (Form designed for use on site (15-0000) typewriter)

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. CT R 00000046-1485-2-07		2. Page 1 of 1		Information in the shaded areas is not required by Federal law, but may be required by State law.	
3. Generator's Name and Mailing Address P & H Truck Stop, Inc. Rt. 1, Box 478 Wells River, VT 05081				A. State Manifest Document Number CT F 0286207			
4. Generator's Phone () 802 479-2141				B. B.L. (Gen. Sec. Address) None			
5. Transporter 1 Company Name Lee's Oil Service, Inc.				C. B.L. (Gen. Sec. Address) None			
6. Transporter 2 Company Name CHEM-ALL Corp.				D. B.L. (Gen. Sec. Address) None			
7. Designated Facility Name and Site Address Environmental Cleanup Company 106 Main Street South Portland, ME 04106				E. B.L. (Gen. Sec. Address) None			
8. US EPA ID Number NE D 01005-0009				F. B.L. (Gen. Sec. Address) None			
9. US EPA ID Number NE D 01005-0009				G. B.L. (Gen. Sec. Address) None			
10. US EPA ID Number NE D 01005-0009				H. B.L. (Gen. Sec. Address) None			
11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number) WASTE PETROLEUM OIL (MAY) N.O.S. Waste Oil, n.o.s., combustible liquid, n.o.s. COMBUSTIBLE LIQUID NA1370				12. Containers No. Type 0.0.1 7.7.0.004.0		13. Total Quantity 0.0.1 7.7.0.004.0	
14. Additional Descriptions for Materials Listed Above See 11. Above				K. Handling Codes for Wastes Listed Above See 11. Above			
15. Special Handling Instructions and Additional Information LN7128 105 Job #93-163 DAIR EMERGENCY call CYN OIL CORP. (617) 344-0265							
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations, and all applicable State laws and regulations. If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment. OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford. Printed/Typed Name: P & H Truckstop Inc. Signature: Robert A. Baker, President Month Day Year: 09/20/93							
17. Transporter 1 Acknowledgement of Receipt of Materials Printed/Typed Name: Lee Jackson Lee Oil Signature: Lee Jackson Lee Month Day Year: 09/20/93							
18. Transporter 2 Acknowledgement of Receipt of Materials Printed/Typed Name: Richard M. Sullivan Signature: Richard M. Sullivan Month Day Year: 09/24/93							
19. Discrepancy Indication Space Box 9: CYN OIL CORP 1444 Washington St Stoughton, MA 01072 Box 10: MA082305117 Box 11: 617 344 0265 Box 12: MA97							
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19. Printed/Typed Name: Richard Sullivan Signature: Richard Sullivan Month Day Year: 09/27/93							

EPA Form 8700-02 (Rev. 8/91) Form Approved OMB No. 2000-0088, Regime 93004. Previous edition is obsolete.

ATTACHMENT 2

Laboratory Analytical Reports - Eastern Analytical (1993)

Bruce Cox
Dufresne-Henry
Precision Park
North Springfield, VT 05150

RECEIVED
OCT 20 1993

DUFRESNE-HENRY, INC.

Subject: Laboratory Report

Eastern Analytical, Inc. ID #: 6901 DUF
Client Identification: 413038-9315/P & H Truck Stop
Sample Quantity/Type: 2 soil
Date Received: 23 September, 1993

Dear Mr. Cox:

Enclosed, please find the laboratory report for the above identified project. All analyses were subjected to rigorous quality control measures to assure data accuracy.

The following standard abbreviations and conventions apply throughout all Eastern Analytical, Inc. reports:

- < = "Less than" followed by the detection limit
- TNR = Testing Not Requested
- ND = None detected, no established detection limits

If you have any questions regarding the results contained within, please feel free to directly contact me, the department supervisor, or the analytical chemist who performed the testing in question.

We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,



William Brunkhorst
Lab Director

LABORATORY REPORT

Eastern Analytical, Inc. ID#: 6901 DUF

Client: Dufresne-Henry
Client Designation: 413038-9315/P & H Truck Stop

Sample Qty/Type: 2 soil
Date Received: September 23, 1993

Sample ID: Matrix:	SS-2 Soil	SS-4 Soil	Date of Analysis	Analyst	EPA Method
Organics: (mg/kg)					
Total Petroleum Hydrocarbons	11,000	< 50	10/11/93	JG	418.1

7+11-18?

Approved by: Lorraine Olashaw, Inorganics Supervisor

Lorraine Olashaw

LABORATORY REPORT

Eastern Analytical, Inc. ID#: 6901 DUF

Client: Dufresne-Henry
Client Designation: 413038-9315/P & H Truck Stop

Sample Qty/Type: 2 soil
Date Received: September 23, 1993

Hazardous Substance List Volatile Organic Compounds

Sample ID:	SS-2	SS-4	EPA
Matrix:	Soil	Soil	Method
Date of Analysis:	9/24/93	9/24/93	
Units:	µg/kg	µg/kg	
Analyst:	LB	LB	
Chloromethane	< 100	< 100	8240
Bromomethane	< 100	< 100	8240
Vinyl Chloride	< 100	< 100	8240
Chloroethane	< 100	< 100	8240
Methylene Chloride	< 10	< 10	8240
Carbon Disulfide	< 10	< 10	8240
1,1-Dichloroethene	< 10	< 10	8240
1,1-Dichloroethane	< 10	< 10	8240
Trans-1,2-Dichloroethene	< 10	< 10	8240
Cis-1,2-Dichloroethene	< 10	< 10	8240
Chloroform	< 10	< 10	8240
1,2-Dichloroethane	< 10	< 10	8240
1,1,1-Trichloroethane	< 10	< 10	8240
Carbon Tetrachloride	< 10	< 10	8240
Bromodichloromethane	< 10	< 10	8240
1,2-Dichloropropane	< 10	< 10	8240
Trans-1,3-Dichloropropene	< 10	< 10	8240
Trichloroethene	< 10	< 10	8240
Dibromochloromethane	< 10	< 10	8240
1,1,2-Trichloroethane	< 10	< 10	8240
Cis-1,3-Dichloropropene	< 10	< 10	8240
2-Chloroethylvinylether	< 10	< 10	8240
Bromoform	< 10	< 10	8240
Tetrachloroethene	< 10	< 10	8240
1,1,2,2-Tetrachloroethane	< 10	< 10	8240
Acetone	< 500	< 500	8240
2-Butanone (MEK)	< 100	< 100	8240
Vinyl Acetate	< 100	< 100	8240
4-Methyl-2-Pentanone (MIBK)	< 100	< 100	8240
2-Hexanone	< 100	< 100	8240
Benzene	< 10	< 10	8240
Toluene	< 10	< 10	8240
Ethylbenzene	< 10	< 10	8240
Total Xylenes	< 10	170	8240
Chlorobenzene	< 10	< 10	8240
Styrene	< 10	< 10	8240

Approved By: Timothy Schaper, Organics Supervisor

Timothy Schaper



ENDYNE, INC.

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

LABORATORY REPORT

EPA METHOD 602--PURGEABLE AROMATICS

CLIENT: Griffin International
PROJECT NAME: P&H Truck Stop
REPORT DATE: December 8, 1993
DATE SAMPLED: November 29, 1993
DATE RECEIVED: November 29, 1993
ANALYSIS DATE: December 8, 1993

PROJECT CODE: GIPH1391
REF.#: 54,528
STATION: Supply Well
TIME SAMPLED: 11:10
SAMPLER: J. Bernhard

<u>Parameter</u>	<u>Detection Limit (ug/L)</u>	<u>Concentration (ug/L)</u>
Benzene	1	ND ¹
Chlorobenzene	1	ND
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
Ethylbenzene	1	ND
Toluene	1	ND
Xylenes	1	ND
MTBE	10	ND

Bromobenzene Surrogate Recovery: 105%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:

1 None detected

ATTACHMENT 3

Results of Leak Test by Jaworski Geotech Inc.



**JAWORSKI
GEOTECH, INC.**

SERVICES

- Geotechnical
- Environmental
- Construction
- Underground Tank
- Materials Testing

OFFICES

- Manchester, N.H.
- White River Jct., VT.
- Mansfield, MA.

November 15, 1993

Mr. Nelson Baker
P & H Truck Stop
RR 1, Box 47B
Wells River, VT 05081

re: Tank Retest Results
P & H Truck Stop
Wells River, Vermont

Project No. V93284

Dear Mr. Baker:

The purpose of this letter is to provide you with the results of the retest performed on the underground storage tank at your facility in Wells River, Vermont. The test was performed by a representative of this firm on November 10, 1993 utilizing the Horner EZY-Chek System and equipment. The original test, performed on October 29, 1993, indicated the tank system was leaking. Since that time, the tank top was excavated and lines were disconnected to isolate the tank. The contents of this letter are subject to the attached Limitations.

Weather conditions at the time of the test consisted of cloudy skies and temperatures between 40 and 50 degrees Fahrenheit. The tank was a 3,000-gallon special unleaded gasoline tank. The attached field sketch shows the relative location of the tank on the site.

The tank was constructed of steel and had a diameter measuring 64 inches, with a 41-inch long fill pipe. As noted above, connecting lines were disconnected and the tank was isolated. The test was performed in a standpipe at a level of 150 inches above the tank bottom to maintain a minimum head pressure of 2 psi.

The testing equipment was set up on the tank and the system was overfilled. The tank system was allowed to stabilize before recording liquid level and temperature changes. Data sheets used in recording are attached to this letter.

The results for the tank system indicated a temperature compensated loss of 1.385 gallons per hour. These results are above the National Fire Protection Agency (NFPA) and the State of Vermont guidelines of 0.05 gallons per hour. In accordance with these criteria, the tank system can be considered leaking.

The Junction Marketplace • White River Junction, Vermont 05001 • (802) 295-7800 • FAX 295-6089

Mr. Nelson Baker
Page 2
November 15, 1993

Requirements of the State of Vermont Department of Environmental Conservation (DEC) require that systems be reported within two hours of receiving notice of the failure. In accordance with regulations, we have reported this test result to Ms. June Middleton of the DEC, by telephone, within the allotted time.

Should you have any questions regarding the contents of this letter report, please do not hesitate to contact our office. We thank you for allowing us the opportunity to provide you with our services and look forward to working with you in the future.

Very truly yours,

JAWORSKI GEOTECH, INC.

Richard Verrier (RD)

Richard G. Verrier (NH0015)

RGV#1/etc

Attachments

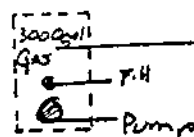
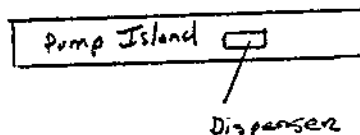
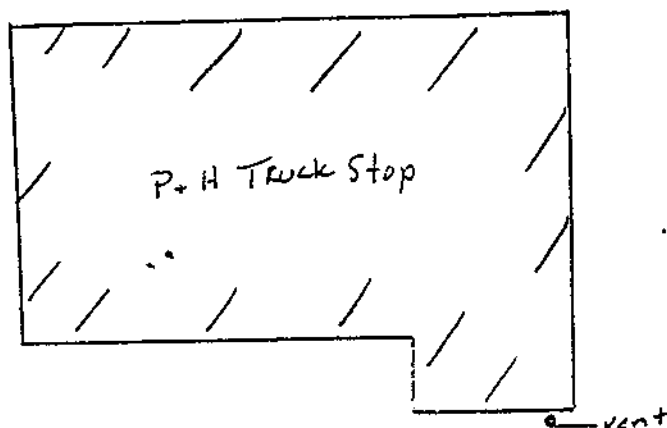
cc: Ms. June Middleton, VT DEC
Mr. Mark Coleman, VT DEC

LIMITATIONS

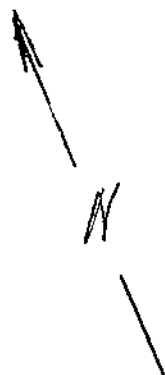
1. Tank tests were performed for the purpose of determining the probability of tank leaks in accordance with requirements outlined in the National Fire Protection Association's Standard 329 Precision Test. According to this standard, a tank having a temperature compensated product loss of less than 0.05 gallons/hour is certified to be tight. This criterion recognizes a tolerance in the tank testing procedure. As such, measured temperature compensated product losses of less than this value do not necessarily mean the tank system does not leak, but rather that tank system leaks, if any, are less than that which can be detected by the test methods used.
2. The tank test was performed on a specific day under specific conditions as reported and the results reflect conditions on that day only. Conditions prior to or subsequent to the test may be different and as such do not necessarily reflect the results of the test.
3. The tests performed and results provided were done so with consideration given to tank data provided as reported. Should other data become available relative to the tank system, this data should be reviewed by Jaworski Geotech, Inc. Depending on this review, results reported may be modified.
4. The tank test and the results provided were done so for the exclusive use of P & H Truck Stop and their Lender and Insurer solely for their use in their evaluation of the tank system. Except for the purpose of satisfying Federal, State and local regulations, these findings shall not, in whole or in part, be disseminated or conveyed to any other party nor used by any other party in whole or in part without prior written consent from Jaworski Geotech, Inc. The results were obtained using methods prescribed by Horner Creative Products, manufacturer of the Horner EZY-Chek Leak Detector equipment used to complete the test. No other warranty, expressed or implied, is made.

Project: P+H Truck Stop

Project No.: V93284 Date: November 1, 1993



3000 gallon
Special unleaded gasoline



DATA CHART FOR TANK SYSTEM TIGHTNESS TEST (EZY CHEK)

CLIENT

NAME OF SUPPLIER, OWNER OR DEALER Pell Truck Store
ADDRESS (RD. & STREET) _____
CITY AND STATE Wells River, VT.

DATE OF TEST November 10, 1993
WEATHER Cloudy TEMPERATURE 40-50

TANK INFORMATION

CAPACITY (NOMINAL) 3000 GALS. SIZE OF FILL OR TEST OPENING _____ IN.
CAPACITY (CHART) _____ GALS. TOP OFF TIME _____ GALLONS
DIMENSIONS: DIAMETER 24 NUMBER OF GALLONS ADDED TO START TEST _____
LENGTH _____ TANK NO. _____
INCHES OF WATER - BEFORE TEST _____ AFTER TEST _____
CONTENTS (PRODUCT) Special Gas
TANK MATERIAL Steel
APPROX. AGE _____
PUMP SYSTEM (TYPE) Supercharged

TEST CALIBRATION

SIZE OF CAL. BAR OR ML'S ADDED .025 10 .025
(ALU) (FACTOR A)

LINE MOVEMENT

1	<u>40</u>	to	<u>50</u>	=	<u>10</u>	LINES
2	<u>30</u>	to	<u>40</u>	=	<u>10</u>	LINES
3	<u>40</u>	to	<u>50</u>	=	<u>10</u>	LINES
TOTAL						<u>30</u> LINES + 3 = <u>10</u> LINES
						(ALU)

END OF TEST CALIBRATION

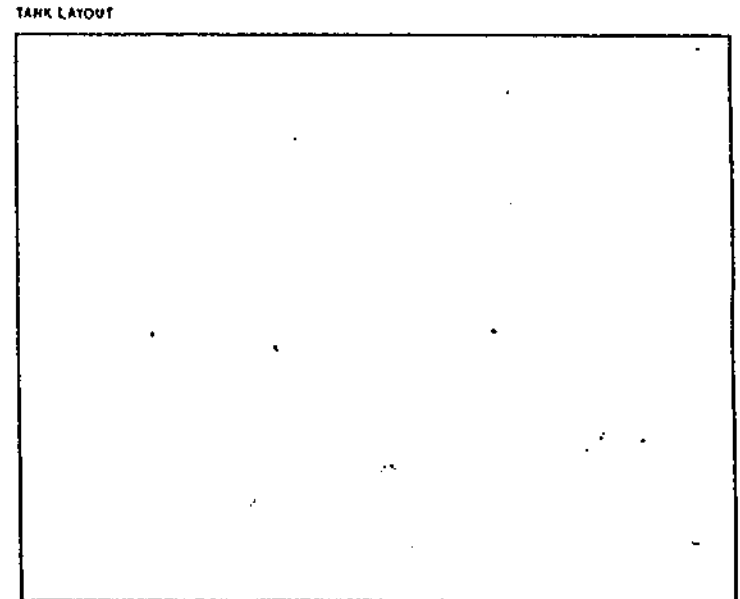
SIZE OF CAL. BAR OR ML'S ADDED _____ (ALU) (FACTOR A)

LINE MOVEMENT

1	_____	to	_____	=	_____	LINES
2	_____	to	_____	=	_____	LINES
3	_____	to	_____	=	_____	LINES
TOTAL						_____ LINES + 3 = _____ LINES
						(ALU)

MEASURED API SPECIFIC GRAVITY 54
PRODUCT TEMPERATURE 60
API SPECIFIC GRAVITY @ 60° F 54 (FROM TABLE A)
COEFFICIENT OF EXPANSION .000571 (FROM TABLE B)
.000571 x 3000 = 1.713 (FACTOR B)
C.O.E. TOTAL CAPACITY (GAL) VOL CHANGE

ADDITIONAL NOTES OR COMMENTS

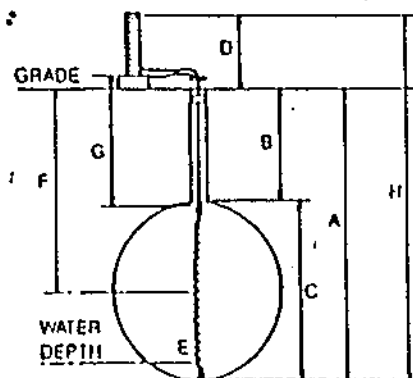


TECHNICIAN(S)

DATE

DATA CHART FOR TANK SYSTEM TIGHTNESS TEST (EZY CHEK)

Time (Military)	Reading No	PRODUCT MONITORING ON LER				Product +Gain -Loss	TEMPERATURE COMPENSATION A				Product +Gain -Loss	TEMPERATURE COMPENSATION B				NET VOL CHANGE	
		Start	End	+Gain -Loss	X Factor A		Start	End	+Gain -Loss	X Factor B		Start	End	+Gain -Loss	X Factor B	+Expansion -Contraction	LLR
05	1	99	52	-47	.0025	.13	.042	.040	-.002	1.713	-.00342						- .1245
10	2	52	2	-50		-.125	.040	.039	-.001		-.00171						- .1252
15	3	95	52	-43		-.1075	.039	.039	-.001		-.00171						- .1057
20	4	52	9	-43		-.1075	.039	.037	-.001		-.00171						- .1057
25	5	94	52	-42		-.105	.037	.037	0		0						- .105
30	6	52	2	-50		-.125	.037	.037	0		0						- .125
35	7	96	40	-56		-.14	.037	.036	-.001		-.00171						- .1382
40	8	40	0	-40		-.1	.036	.035	-.001		-.00171						- .0982
45	9	92	54	-40		-.1	.035	.035	0		0						- .1
50	10	54	3	-52		-.13	.035	.035	0		0						- .13
55	11	96	54	-42		-.105	.035	.035	0		0						- .105
60	12	54	4	-50		-.125	.035	.035	0		0						- .1232



- A. Tank Bot. to Grade
- B. Tank Top to Grade
- C. Tank Diameter
- D. Test Level above grade
- E. Depth of water in tank
- F. Depth for taking sample
- G. Temp. Probe depth (connector)
- H. Test level to Tank Bot.
- I. Groundwater above tank bottom
- J. Product Pressure per 1" height _____ PSI

Test Pressure Formula

$$\frac{\text{H}}{\text{H}} \times \frac{\text{J}}{\text{J}} - \left(\frac{\text{I}}{\text{I}} \times .036 \right) = \text{NET TEST PRESSURE}$$

Send Report to:

Client

Address

City, State

Phone ()

Attn:

CERTIFICATION This is to certify that this tank system was tested on date shown. Those indicated "Tight" meet the criteria established by the National Fire Protection Association Pamphlet 329.

Tank No.

Tight

Leakage Indicated

Technician

Date Tested

Retest of 3000 gal

Tank I isolated

1.385 gpm/1000

Kyle Kerner

11/10/93

ATTACHMENT 4

Water Supply Well Log

WELL NUMBER

17039

(For Driller's Use)

This report must be completed and submitted to the Department of Water Resources and Environmental Engineering, State Office Building, Montpelier, Vermont 05602, no later than 60 days after completion of the well.

State of Vermont

DEPARTMENT OF WATER RESOURCES AND ENVIRONMENTAL ENGINEERING WELL COMPLETION REPORT

WATER RESOURCE USE ONLY

W.R. 97 U.S.G.S.
Field Location ☐ Map area 5406
Latitude _____ " Elev. _____
Longitude _____ " Topo. _____
Scale: 62,500 ☐ 25,000 ☐ 24,000 ☐
Data in Town Files ☐

Location map attached to WCR _____

1. WELL OWNER ~~RED~~ P+H TRUCK STOP
OR
WELL PURCHASER Rte. 302 Wells River, VT
Name NEWBURY Permanent Mailing Address _____
2. LOCATION OF WELL: TOWN WELLS RIVER SUBDIVISION _____ LOT NO. _____
3. DATE WELL WAS COMPLETED OCT 28 1983
4. PROPOSED USE OF WELL: ☒ Domestic, ☐ Other _____
5. REASON FOR DRILLING WELL: ☒ New Supply, ☐ Replace Existing Supply, ☐ Deepen Existing Well, ☐ Test or Exploration,
☐ Provide Additional Supply, ☐ Other _____
6. DRILLING EQUIPMENT: ☐ Cable Tool, ☒ Rotary with A-P, ☐ Other _____
7. TYPE OF WELL: ☒ Open Hole in Bedrock, ☐ Open End Casing, ☐ Screened or Slotted, ☐ Other _____
8. TOTAL DEPTH OF WELL: 260 feet below land surface.
9. CASING FINISH: ☒ Above ground, Finished, ☐ Above ground, Unfinished, ☐ Buried, ☐ In Pit, ☐ Removed, ☐ None used, ☐ Other _____
10. CASING DETAILS: Total length 61 ft. Length below L.S. 60 ft. Dia. 6 in. Material STEEL Wt. 17.2 lb./ft.
11. LINER OR INNER CASING DETAILS: Length used _____ ft. Diameter _____ in. Material _____ Weight _____ lb./ft.
12. METHOD OF SEALING CASING TO BEDROCK: ☒ Drive Shoe, ☐ Grout - type _____, Drilled 8 3/4 in. hole 41 ft in Bedrock
☐ Other _____
13. SCREEN DETAILS: Mesh and Type _____, Material _____, Length _____ ft., Diameter _____ in.,
Slot Size _____, Depth to top of screen in feet below land surface _____ ft., Gravel pack if used: Gravel Size or Type _____
14. YIELD TEST: ☐ Bailed, ☐ Pumped, ☒ Compressed Air, for 1 hours at 30 Gallons per minute
Measured by ☒ Bucket, ☐ Orifice pipe, ☐ Wier, ☐ Meter ☐ Permanent Airlift installed
15. STATIC WATER LEVEL: _____ feet below land surface, Date or Time measured _____, Overflows at _____ G.P.M.
16. WATER ANALYSIS: Has the water been analyzed? ☐ Yes ☐ No, If Yes, Where _____
17. SPECIAL NOTES: _____
18. WELL LOG

Depth from Land Surface	Water Bearing	Formation Description	Sketch
Feet	Feet		
Ground Surface	20	SAND CLAY GRAVEL Boulders	
20	260	GRAY ROCK	

19. SITE MAP

Show permanent structure such as buildings, septic tanks, and/or other land marks and indicate not less than two distances to the well. Indicate local street name and subdivision lot number.

WELL



RTE 302

20. TESTED YIELD

If the yield was tested at different depths during drilling, list below

Feet	Gallons Per Minute

WELL DRILLED BY: BRUCE FELLETTDOING BUSINESS AS: ALCO CE VT
Company or Business NameREPORT FILED BY: Bruce FelleTT
Authorized SignatureDATE OF REPORT: OCT 28 WELL DRILLERS LIC. NO. 16

ATTACHMENT 5

Letter dated May 13, 1994 to Nelson Baker from Charles Schwer



State of Vermont

Department of Fish and Wildlife
Department of Forests, Parks and Recreation
Department of Environmental Conservation
State Geologist
Natural Resources Conservation Council
RELAY SERVICE FOR THE HEARING IMPAIRED
1-800-253-0191 TDD>Voice
1-800-253-0195 Voice>TDD

AGENCY OF NATURAL RESOURCES
Department of Environmental Conservation
Hazardous Materials Management Division
103 South Main Street/West Office
Waterbury, Vermont 05671-0404
(802) 241-3888
FAX (802) 244-5141

May 13, 1994

Nelson S. Baker
P & H Truck Stop, Inc.
P.O. Box 47B
Wells River, VT 05081

RE: Petroleum contamination at P & H Truck Stop
(Site #93-1512)

Dear Mr. Baker:

The Sites Management Section (SMS) has received a February 11, 1994 memorandum from Tim McNamara of the Management and Prevention Section regarding the above referenced site. P & H Truck Stop (P & H) became a site after a 3,000 gallon gasoline underground storage tank (UST) failed a tightness test on October 29 and November 10, 1993. Based on a site assessment performed by Laurie T. Reed of Griffin International, Inc., the SMS sent a letter dated January 13, 1994 notifying P & H that it had been removed from the Hazardous Materials Active Sites List and currently considered a closed site.

Unfortunately, neither the site assessment nor site file acknowledged the fact that only one month before Griffin's assessment, on September 20, 1993, two abandoned waste oil USTs were closed in place at the facility. A closure report from Dufresne-Henry for the two USTs was processed by the UST Program, but not referred to the SMS at that time. *5400M waste oil test results*

During the tank pull, soils screened in the tank bed had peak concentrations of 25 ppm as measured by a photoionization detector (PID). Results from laboratory soil samples taken during the closure of the two USTs indicate significant levels of petroleum contamination confirmed by onsite PID readings. Neither groundwater nor free product was observed. All soils were backfilled since the full extent of the contamination was unknown.

Based on the above information, the SMS has determined that additional work is necessary at the site in order to determine the severity of contamination present. Therefore, the SMS is reopening the site and requesting that P & H Truck Stop retain the services of a qualified environmental consultant to perform the following:

1. Further define the degree and extent of contamination to the soil. This may be accomplished by obtaining soil borings, digging test pits, or performing a soil gas survey.


2. Determine the need for a long term treatment and/or monitoring plan which addresses the contamination present at the site. The need for such a plan should be based on the results of the above investigations.

3. Submit to the SMS a summary report which outlines the work performed as well as providing conclusions and recommendations. Included should be detailed well logs, analytical data, site map, area map, and a groundwater contour map.

Please have your consultant submit a preliminary work plan and cost estimate within fifteen days of your receipt of this letter so that it may be approved prior to the initiation of onsite work.

The underground storage tanks at P & H Truck Stop are covered by the Petroleum Cleanup Fund as set forth in 10 V.S.A. Section 1941. An owner or permittee of an underground storage tank, who is not in significant violation of his or her permit, is eligible for reimbursement from the fund. The owner or permittee must pay for the removal or repair of the failed tank and for the first \$10,000 of the cleanup; after that the fund will reimburse the tank owner or permittee for additional cleanup costs up to \$1 million. Attached please find the document titled "Reimbursement Package for the Petroleum Cleanup Fund" which further explains this program. Additionally, the Secretary of the Agency of Natural Resources reserves the right to seek cost recovery of fund monies spent at the site if the Secretary concludes that P & H Truck Stop, Inc. was in significant violation of the Vermont Underground Storage Tank statute (10 V.S.A., Chapter 59). If you have any questions, please feel free to call.

Sincerely,



Chuck Schwer, Supervisor
Sites Management Section

cc: Laurie T. Reed, Griffin International, Inc.
Wells River Selectboard
DEC Regional Office

ATTACHMENT 6

Site Investigation Expressway Form for the P&H Truck Stop Site

VT-HMMD-SMS
Draft
May 1994

FAX TO CHUCK SCHWER
SITES MANAGEMENT SECTION

FAX# 802-241-3296

PHONE 802-241-3888



State of Vermont

7-21-94

Department of Fish and Wildlife
Department of Forests, Parks and Recreation
Department of Environmental Conservation
State Geologist
Natural Resources Conservation Council
RELAY SERVICE FOR THE HEARING IMPAIRED
1-800-253-0191 TDD/Voice
1-800-253-0155 Voice/TDD

AGENCY OF NATURAL RESOURCES
Department of Environmental Conservation

Hazardous Materials Management Division
103 South Main Street/West Office
Waterbury, Vermont 05671-0404
(802) 241-3888
FAX (802) 244-5141

SITE INVESTIGATION EXPRESSWAY NOTIFICATION

Site Owner: NELSON BAKER

Site Name, Town: P+H TRUCKSTOP, WELLS RIVER #93-1512

☒ Yes, this site will participate in the Site Investigation Expressway Process.

☐ No, this site will not participate in the Site Investigation Expressway Process.

If yes, please complete the checklist below:

☒ Contamination present in soils above action levels ☒ Yes ☐ No

If yes, summarize levels:

25 PPM BY PID AT WASTE OIL TANK UST
100 PPM BY PID NEAR GASOLINE UST

☒ Free product observed ☐ Yes ☒ No

☒ Groundwater contamination observed ☐ Yes ☒ No

☒ Surface water contamination observed ☐ Yes ☒ No

☒ Suspected release of hazardous substances ☒ Yes ☐ No

If yes, please explain:

TANK TIGHTNESS TEST FAILURE

☒ Affected receptors ☐ Yes ☒ No

If yes, please identify receptors including names and addresses of third party receptors:

Please provide an estimated date of when you expect to submit Site Investigation Report: 8-8-94

DON MAYNARD/KARL JOHNSON THE JOHNSONS

Chlorine Free 100% Recycled Paper

Regional Office - Barre Essex Jct. Putnam St. Springfield St. Johnsonbury

Figure 2

ATTACHMENT 7

Griffin well log for MW-1

PROJECT P&H TRUCK STOP
LOCATION WELLS RIVER, VERMONT
DATE DRILLED 11/22/93 TOTAL DEPTH OF HOLE 50'
DIAMETER _____
SCREEN DIA. 2" LENGTH 10' SLOT SIZE 0.010"
CASING DIA. 2" LENGTH 40' TYPE sch 40 pvc
DRILLING CO. GMB DRILLING METHOD HSA
DRILLER LAWRENCE LOG BY L. REED

WELL NUMBER MW1

Site Sketch



ROUTE 302

GRIFFIN INTERNATIONAL, INC

DEPTH IN FEET	WELL CONSTRUCTION	NOTES	BLOWS PER 6" OF SPOON & PID READINGS	DESCRIPTION/SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)	DEPTH IN FEET
0		ROAD BOX			0
0		LOCKING WELL CAP		Pavement	0
2		CONCRETE			2
2		BENTONITE	2'-3.5' 2.5 ppm	Dark brown, dry, silty fine SAND, no odor	4
4			5'-7': 5,7,7,14 2.8 ppm	Med. brown, dry, fine SAND, no odor	6
6			7'-9': 16,7,6,7 2.1 ppm		8
8			10'-12': 18,16,19,21 17.4 ppm	Light tan fine QUARTZ SAND, dry, no odor	10
10					12
12					14
14		NATIVE BACKFILL	15'-17': 10,9,16,13 clay: 2.8 ppm sand: 3.2 ppm	Dark gray CLAY, very-moist, no odor	16
16				White med. QUARTZ SAND, moist, no odor	18
18					20
20			20'-22': 15,12,13,14 clay: 17.8 ppm sand: 4.6 ppm	4" dark gray CLAY, wet; no odor 8" white & brown silty med. QUARTZ SAND, no odor	22
22					24
24			25'-27': 17,15,12,11 2.8 ppm	6" dark brown/gray silty SAND, moist. 2" clean fine brown SAND, dry, no odor	26
26		WELL RISER			28
28			30'-32': 15,10,17,14 5.4 ppm	Gray, silty fine SAND, no odor, damp	30
30					32
32			35'-37': 16,9,10,18 19.2 ppm	Med. brown very fine SAND & SILT, moist no odor	36
34					38
36		BENTONITE			40
38			40'-42': 10,9,8,11 clay: 1.8 ppm sand: 2.6 ppm	8" brown fine SAND, dry, no odor 4" dark gray CLAY, wet, no odor	42
40		SAND PACK			44
42		WELL SCREEN			46
44			45'-47': 30,42,58,111 2.4 ppm	Light tan, very clean, well sorted fine QUARTZ SAND, very dry	48
46		BOTTOM CAP		Muddy silty CLAY, wet;	48
48		UNDISTURBED NATIVE SOIL	49': 0.8 ppm	BASE OF WELL AT 49'	50
50				END OF EXPLORATION AT 50'	50

ATTACHMENT 8

Drilling Logs for JCO-1 thru JCO-5

CEMENT	ASPHALT	VERY FINE SAND	SILTY CLAY	GRAVELLY SAND
BACKFILL	GROUT	FINE SAND	SANDY SILT	GRAVEL
BENTONITE	TOPSOIL	MEDIUM SAND	SANDY TILL	CLAY
SAND PACK	DOLEMIT	COARSE SAND	SILTY TILL	TILL
GRAVEL PACK	BEDROCK	SILTY SAND	CLAYEY SAND	SILT

KEY TO GEOLOGY PATTERNS
P & H TRUCK STOP
WELLS RIVER, VERMONT

THE JOHNSON COMPANY, INC.
Environmental Sciences and Engineering
100 STATE STREET MONTPELIER, VT 05602

The Johnson Company, Inc.
Environmental Sciences and Engineering
100 State Street
Montpelier, Vermont 05602

DRILLING LOG
WELL # JCO-1

Project: P&H Truck Stop
Location: Wells River, Vt.
Job # 1-2349-1
Logged By: DMM
Date Drilled: 7/20/94
Driller: Great Works
Drill Method: Hollow Stem Auger

Casing Type: None
Casing Diameter:
Casing Length:
Screen Type: None
Screen Diameter:
Screen Length:
Slot Size: 010

Total Pipe: 0.0 ft.
Stick Up: 0.0 ft.
Total Hole Depth: 22.0 ft.
Well Guard Length: 0.0 ft.
Initial Water Level: None
Surface Elevation: 99.68
T.O.C. Elevation: -

■ = Sampled Interval

Sheet 1 of 2

Depth (feet)	Well Construction	Notes	Geology	PID Reading	Description
5					
4					
3					
2					
1					
0					
0.5		Cement		0.2	0.5-2.5' Asphalt.
1					
2				0.3	2.5-4.5' 20,20,41,38 18" recovery. 0-5" Brown dry fine sand and angular gravel. 5-16" Brown horizontally laminated fine and medium sand. Sharp horizontal contact. 16-18" concrete.
3					
4				1.0	
5				1.0	
6		Backfill			
7				0.2	20,12,13,19 18" recovery. 0-2" concrete. 2-18" dark brown dry horizontally laminated fine sand. Orange Fe stain at 7-8".
8				0.2	
9				5	
10		Bentonite			
11				1.5	5-7.1' 5,3,4,7 23" recovery. 0-7" Dark brown dry, lam. fine sand. Sharp horizontal contact (SHC). 7-23" Dry massive fine sand, little silt fining downward to fine sand and silt. Orange grading down to grey. Many fine distinct orange
12				5	
13		Backfill		50	
14				4.5	
15		Bentonite			
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
31					
32					
33					
34					
35					
36					
37					
38					
39					
40					

(continued on Page 2)

The Johnson Company, Inc.
Environmental Sciences and Engineering
100 State Street
Montpelier, Vermont 05602

DRILLING LOG
WELL # JCO-1

Project: P&H Truck Stop
Location: Wells River, Vt.
Job # 1-2349-1
Logged By: DMM
Date Drilled: 7/20/94
Driller: Great Works
Drill Method: Hollow Stem Auger

Casing Type: None
Casing Diameter:
Casing Length:
Screen Type: None
Screen Diameter:
Screen Length:
Slot Size: 010

Total Pipe: 0.0 ft.
Stick Up: 0.0 ft.
Total Hole Depth: 22.0 ft.
Well Guard Length: 0.0 ft.
Initial Water Level: None
Surface Elevation: 99.68
T.O.C. Elevation: -

■ = Sampled Interval

Sheet 2 of 2

Depth (feet)	Well Construction	Notes	Geology	PID Reading	Description
5					
4					
3					
2					
1					(continued from Page 1)
0					
1					11-13' 10,10,11,10 18" recovery.
2					Alternating 0.5-1.5" layers of tan
3					dry laminated fine and medium sand,
4					with grey moist silt and clay.
5					
6					13-15' 5,7,6,14 18" rec. 0-1" Grey
7					wet silt & clay. Sharp 10 degree
8					contact. 1-4" Brown damp fine sand
9					& silt grading to tan wet fine &
10					med. sand at 4-7". 7-11" Grey wet
11					fine sand SHC. 11-15" Grey wet silt
12					and clay. 15-18" tan dry fine and
13					
14					15-17' 6,8,10,11 17" rec. Tan dry
15					massive medium and fine sand. Odor.
16					
17					17-19' 12,9,10,10 20" rec. 0-15"
18					Tan dry massive medium and fine
19					sand. Odor. 15-20" Alternating 1/8"-
20					1/2" layers of medium and fine sand
21					with fine sand, some silt. Grey and
22					damp.
23					
24					19-21' 4,6,6,8 18" rec. 0-11"
25					Grey damp horizontally laminated
26					fine sand. Odor. 11-18" Saturated
27					same as above. Laboratory sample.
28					
29					21-22' 9,13 8" recovery. Tan dry
30					massive medium and fine sand.
31					Sharp horizontal orange layer at 4-
32					6". No water in hole.
33					
34					
35					
36					
37					
38					
39					
40					

The Johnson Company, Inc.
Environmental Sciences and Engineering
100 State Street
Montpelier, Vermont 05602

DRILLING LOG
WELL # JCO-2

Project: P&H Truck Stop
Location: Wells River, Vt.
Job # 1-2349-1
Logged By: DMM
Date Drilled: 7/20/94
Driller: Great Works
Drill Method: Hollow Stem Auger

Casing Type: None
Casing Diameter:
Casing Length:
Screen Type: None
Screen Diameter:
Screen Length:
Slot Size: 010

Total Pipe: 0.0 ft.
Stick Up: 0.0 ft.
Total Hole Depth: 28.0 ft.
Well Guard Length: 0.0 ft.
Initial Water Level: None
Surface Elevation: 99.4
T.O.C. Elevation: -

■ = Sampled Interval

Sheet 1 of 2

Depth (feet)	Well Construction	Notes	Geology	PID Reading	Description
5					
4					
3					
2					
1					
0					0-0.5' Asphalt
1	Cement			0.2	0.5-2.5' 31,35,23,19 16" rec. 0-
2				0.4	6" Brown dry fine sand and
3					subangular gravel and pebbles
4					(fill). 6-16" Tan dry massive fine
5				0.5	sand.
6					
7				0.4	2.5-4.5' 22,18,17,16 18" rec. 0-1"
8					brown dry fine sand and subangular
9					gravel and pebbles (spoil). 1-18"
10	Backfill			0.4	Tan dry laminated fine sand.
11					truncated 1/4" silt layer at 12".
12				0.4	
13					5-7' 5,8,9,11 18" rec. 0-2" grey
14				0.4	dry laminated silt and fine sand.
15					2-18" tan dry horizontally
16				0.8	laminated fine sand grading down to
17					fine sand some silt.
18				0.4	
19					7-9' 9,9,12,12 16" rec. Tan dry
20				0.4	massive fine sand.
21	Bentonite				
22				0.4	10-12' 5,7,9,9 18" rec. tan dry
23	Backfill				fine sand. Laminiae dipping 10
24				0.4	degrees.
25					12-14' 9,7,8,9 16" rec. Same as
26	Bentonite			0.4	above.
27					14-16' 4,5,6,7 17" rec. Tan dry
28					horizontally laminated fine sand.
29					16-18' 4,8,9,9 18" rec. 0-16" tan
30					dry horizontally laminated fine
31					sand. 16-18" Grey damp fine sand
32					trace silt. Sharp horizontal
33					laminiae.
34					(continued on Page 2)
35					
36					
37					
38					
39					
40					

The Johnson Company, Inc.
Environmental Sciences and Engineering
100 State Street
Montpelier, Vermont 05602

DRILLING LOG
WELL # JCO-2

Project: P&H Truck Stop
Location: Wells River, Vt.
Job # 1-2349-1
Logged By: DMM
Date Drilled: 7/20/94
Driller: Great Works
Drill Method: Hollow Stem Auger

Casing Type: None
Casing Diameter:
Casing Length:
Screen Type: None
Screen Diameter:
Screen Length:
Slot Size: 010

Total Pipe: 0.0 ft.
Stick Up: 0.0 ft.
Total Hole Depth: 28.0 ft.
Well Guard Length: 0.0 ft.
Initial Water Level: None
Surface Elevation: 99.4
T.O.C. Elevation: -

■ = Sampled Interval

Sheet 2 of 2

Depth (feet)	Well Construction	Notes	Geology	PID Reading	Description
5					
4					
3					
2					
1					
0					(continued from Page 1)
1					
2					
3					18-20' 6,7,7,8 18" rec. 0-8"
4					alternating horizontal 1/4-1/2"
5					layers of dry grey fine sand with
6					orange fine sand trace silt. Sharp
7					horizontal contacts (SHC). 8-18"
8					Tan dry massive fine sand.
9					
10					20-22' 6,8,10,10 20" rec. 0-7"
11					Horizontal 1/2-1" bands of
12					grey/orange/tan dry fine sand. 7-
13					8" Grey damp laminated silt. Sharp
14					5 degree contacts. 8-20" Tan
15					horizontally laminated to massive
16					fine sand.
17					
18					22-24' 6,7,7,7 18" rec. Tan
19					massive dry fine sand, little
20					medium sand.
21					
22					24-26' 5,7,10,13 20" rec. 0-8"
23					Tan massive dry fine sand. 8-12"
24					alternating layers of
25					tan/grey/orange fine sand with fine
26					sand, little silt. Sharp 5 degree
27					contacts. 12-20" grey dry
28					horizontally laminated fine sand
29					
30					26-28' 11,10,11,6 19" rec. 0-15"
31					Tan dry massive to laminated fine
32					sand. Damp at 11-15". grey damp
33					silt and clay layer at 5-6" and
34					8". 15-19" Grey moist lam. silt
35					and clay. Sharp horizontal contacts.
36					
37					
38					
39					
40					

The Johnson Company, Inc.
Environmental Sciences and Engineering
100 State Street
Montpelier, Vermont 05602

DRILLING LOG
WELL # JCO-3

Project: P&H Truck Stop
Location: Wells River, Vt.
Job # 1-2349-1
Logged By: DMM
Date Drilled: 7/20/94
Driller: Great Works
Drill Method: Hollow Stem Auger

Casing Type: None
Casing Diameter:
Casing Length:
Screen Type: None
Screen Diameter:
Screen Length:
Slot Size: 010

Total Pipe: 0.0 ft.
Stick Up: 0.0 ft.
Total Hole Depth: 16.0 ft.
Well Guard Length: 0.0 ft.
Initial Water Level: None
Surface Elevation: 99.27
T.O.C. Elevation: -

■ = Sampled Interval

Sheet 1 of 1

Depth (feet)	Well Construction	Notes	Geology	PID Reading	Description
5					
4					
3					
2					
1					
0					
1		Cement		0.4-0.8	0-3' Brown dry fine sand, little silt, subangular gravel (fill). Concrete from 2.5-2.8'.
2					
3					5-7' 2,2,4,7 18" rec. 0-8" dark brown dry fine sand some silt. Sharp horizontal contact (SHC). 8-18" Brown massive dry fine sand.
4					
5		Backfill		0.8	7-9' 18,27,25,17 17" rec. 0-15" tan dry massive fine sand, trace medium sand. SHC. 15-17" Tan dry massive medium and fine sand.
6					
7					
8				0.4	10-12' 2,6,4,5 21" rec. 0-2" Brown & orange damp fine sand, little silt. 2-9" grey wet horz. lam. silt & clay. SHC. 9-13" Two tan dry fining up fine sand to fine sand, some silt layers. 13-21" Grey wet horz. lam. silt & clay with 1" fine
9					
10				0.4	12-14' 7,6,7,6 18" rec. Alternating 1/4-1/2" layers of tan damp fine sand with grey wet laminated silt and clay. SHC.
11					
12				6.5	14-16' 1,2,6,7 17" rec. Odor. 0-3" grey saturated fine sand. SHC. 3-8" grey saturated laminated silt and clay (PID=90 sample for lab). 8-17" grey damp to dry fine and medium sand (PID=40).
13		Bentonite			
14					
15				90-40	
16					
17					

The Johnson Company, Inc.
Environmental Sciences and Engineering
100 State Street
Montpelier, Vermont 05602

DRILLING LOG
WELL # JCO-4

Project: P&H Truck Stop
Location: Wells River, Vt.
Job # 1-2349-1
Logged By: DMM
Date Drilled: 7/21/94
Driller: Great Works
Drill Method: Hollow Stem Auger

Casing Type: None
Casing Diameter:
Casing Length:
Screen Type: None
Screen Diameter:
Screen Length:
Slot Size: 010

Total Pipe: 0.0 ft.
Stick Up: 0.0 ft.
Total Hole Depth: 26.0 ft.
Well Guard Length: 0.0 ft.
Initial Water Level: None
Surface Elevation: 99.72
T.O.C. Elevation: -

■ = Sampled Interval

Sheet 1 of 2

Depth (feet)	Well Construction	Notes	Geology	PID Reading	Description
5					
4					
3					
2					
1					
0					
1		Cement			0-1' Asphalt over brown dry fine sand some silt, subangular pebbles (fill)
2				0.4	
3					
4					1-5' Tan dry fine and medium sand.
5				0.2	
6					
7				0.2	5-7' 2,5,5,7 18" rec. tan dry horizontally laminated fine sand.
8		Backfill			Grey dry 1/8" fine sand and silt layers at 2", 4", and 8".
9				0.4	
10					
11				0.4	7-9' 9,9,14,18 20" rec. Tan dry fine sand. Laminated to massive.
12				0.4	Five fine sand some silt laminae with sharp 5 degree contacts.
13				0.2	
14					
15				0.2	10-12' 4,7,10,10 18" rec. Tan dry horizontally laminated fine sand.
16		Bentonite			Fine sand some silt from 3-3.5".
17				0.4	Silt and clay from 10-11" Sharp horizontal contacts (SHC).
18				0.2	
19		Backfill			
20				0.3	12-14' 10,12,15,16 14" rec. 0-3" tan dry fine sand. SHC. 3-14" grey dry massive medium and coarse quartz sand.
21				0.2	
22					
23					
24		Bentonite			
25					
26					
27					
28					14-16' 4,10,16,21 15" rec. Tan dry massive fine sand.
29					
30					
31					
32					16-18' 13,16,15,20 16" recovery. Tan dry horizontally laminated fine sand. Fine sand some silt laminae at 2". 1/4" fine sand some silt layer at 14". SHC.
33					
34					
35					
36					
37					
38					(continued on Page 2)
39					
40					

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Montpelier, Vermont 05602

DRILLING LOG
WELL # JCO-4

Project: P&H Truck Stop
Location: Wells River, Vt.
Job # 1-2349-1
Logged By: DMM
Date Drilled: 7/21/94
Driller: Great Works
Drill Method: Hollow Stem Auger

Casing Type: None
Casing Diameter:
Casing Length:
Screen Type: None
Screen Diameter:
Screen Length:
Slot Size: 010

Total Pipe: 0.0 ft.
Stick Up: 0.0 ft.
Total Hole Depth: 26.0 ft.
Well Guard Length: 0.0 ft.
Initial Water Level: None
Surface Elevation: 99.72
T.O.C. Elevation: -

■ = Sampled Interval

Sheet 2 of 2

Depth (feet)	Well Construction	Notes	Geology	PID Reading	Description
5					
4					
3					
2					
1					
0					
1					(continued from Page 1)
2					
3					18-20' 5,6,10,14 18" rec. Tan dry
4					horizontally laminated fine sand.
5					
6					20-22' 12,14,17,20 16" rec. Same
7					as above.
8					
9					22-24' 14,19,18,16 17" rec. Same
10					as above.
11					
12					24-26' 6,3,8,15 20" rec. 0-6"
13					Orange and tan, dry to damp, horz.
14					lam. fine sand. SHC. 6-15" Grey
15					saturated horz. 1/8" layers of silt
16					and clay. SHC. 15-19" Tan damp
17					massive fine sand. 19-20" Grey
18					saturated silt and clay.
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
31					
32					
33					
34					
35					
36					
37					
38					
39					
40					

The Johnson Company, Inc.
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DRILLING LOG
WELL # JCO-5

Project: P&H Truck Stop
Location: Wells River, Vt.
Job # 1-2349-1
Logged By: DMM
Date Drilled: 7/21/94
Driller: Great Works
Drill Method: Hollow Stem Auger

Casing Type: None
Casing Diameter:
Casing Length:
Screen Type: None
Screen Diameter:
Screen Length:
Slot Size: 010

Total Pipe: 0.0 ft.
Stick Up: 0.0 ft.
Total Hole Depth: 26.0 ft.
Well Guard Length: 0.0 ft.
Initial Water Level: None
Surface Elevation: 98.83
T.O.C. Elevation: -

■ = Sampled Interval

Sheet 1 of 2

Depth (feet)	Well Construction	Notes	Geology	PID Reading	Description
5					
4					
3					
2					
1					
0					
1		Cement			0-1' brown dry fine sand some silt, subangular pebbles (fill). 1-2'
2				0.2	grey dry fine sand little silt. 2-
3					5' tan dry fine sand.
4					
5					
6					5-7' tan dry fine sand. 7-9 tan
7		Backfill		0.2	dry fine and medium sand. 9-10' tan
8					dry fine sand with grey dry sand
9					some silt layers.
10					
11				0.2	10-12' 4,6,6,10 14" rec. Tan dry
12					massive fine and medium sand.
13				0.3	
14					12-14' 8,9,15,23 17" rec. Tan dry
15		Bentonite		0.3	horizontally laminated fine and
16					medium sand.
17				0.4	
18		Backfill			14-16' 8,11,13,27 18" rec. 0-6"
19				0.3	tan dry horz. lam. fine sand. 6-
20					14" tan dry massive medium sand.
21				0.3	Sharp horizontal contacts (SHC). 14-
22					18" tan damp laminated fine sand.
23		Bentonite		0.5	
24					16-18' 11,12,15,17 18" rec. 0-5" tan
25				0.5	dry horz. lam. fine sand. SHC. 5-9"
26					Brown damp horz. lam. fine sand
27					little silt. 9-15" tan dry horz.
28					lam. fine sand. Lower 1" orange. 15-
29					18" Altering 1/2" beds of tan dry
30					fine sand and brwn damp fine sand,
31					
32					18-20' 5,8,11,10 18" rec. 0-16"
33					tan dry horz. lam. fine sand. SHC.
34					16-18" brown damp horz. lam. fine
35					sand little silt.
36					
37					
38					(continued on Page 2)
39					
40					

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Montpelier, Vermont 05602

DRILLING LOG
WELL # JCO-5

Project: P&H Truck Stop
Location: Wells River, Vt.
Job # 1-2349-1
Logged By: DMM
Date Drilled: 7/21/94
Driller: Great Works
Drill Method: Hollow Stem Auger

Casing Type: None
Casing Diameter:
Casing Length:
Screen Type: None
Screen Diameter:
Screen Length:
Slot Size: 010

Total Pipe: 0.0 ft.
Stick Up: 0.0 ft.
Total Hole Depth: 26.0 ft.
Well Guard Length: 0.0 ft.
Initial Water Level: None
Surface Elevation: 98.83
T.O.C. Elevation: -

■ = Sampled Interval

Sheet 2 of 2

Depth (feet)	Well Construction	Notes	Geology	PID Reading	Description
5					
4					
3					
2					
1					
0					(continued from Page 1)
1					
2					20-22' 9,10,8,11 19" rec. 0-6"
3					tan massive fine sand. Dry to damp.
4					6-7" grey damp fine sand some silt.
5					SHC. 7-13" tan dry horz. lam. fine
6					sand. SHC. 13-17" grey laminated
7					saturated silt and clay. 17-18"
8					brown damp massive fine sand.
9					
10					22-24' 9,9,14,18 18" rec. 0-1"
11					grey damp massive silt. 1-7" Tan
12					horz. lam. fine sand. dry to damp.
13					SHCs. 7-10" alternating 1/8-1/4"
14					beds of grey saturated silt and
15					clay with wet fine sand. 10-13"
16					Orange damp lam. fine sand. 13-18"
17					
18					24-26' 5,8,11,16 23" rec. 0-7" tan
19					horz. lam. fine sand. Dry to damp.
20					SHC. 7-16" grey and brown 1/8-1"
21					layers of saturated silt and clay
22					with wet fine sand. SHCs. 16-19"
23					Tan dry massive fine sand. 19-23"
24					Fine sand with silt and clay layers
25					
26					
27					
28					
29					
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38					
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40					

ATTACHMENT 9

Laboratory Analytical Reports - Friedman & Bruya (1994)

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: August 1, 1994
 Date Received: July 22, 1994
 Project: 1-2349-1, P+H Truck Stop
 Date Samples Extracted: July 29, 1994
 Date Extracts Analyzed: July 29, 1994

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES
 FOR BENZENE, TOLUENE, ETHYLBENZENE,
 XYLENES, GASOLINE AND METHYL T-BUTYL ETHER
 USING EPA METHODS 8020 AND 8015
 Samples Processed Using Method 5030
 Results Reported as $\mu\text{g/g}$ (ppm)

Sample ID	JC01-19-21	JC03-14-15
Analyte:		
Methyl t-Butyl Ether	1.5 ^a	1.5
Gasoline	<1.0	170
Benzene	<0.02	3.1
Toluene	<0.02	11
Ethylbenzene	<0.02	3.2
Xylenes	<0.04	18
Internal Standard % Recovery	125%	115%

^a We are unable to confirm due to interfering compound on the FID trace. The sample was calculated from the PID trace.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: August 1, 1994

Date Received: July 22, 1994

Project: 1-2349-1, P+H Truck Stop

Date Samples Extracted: July 29, 1994

Date Extracts Analyzed: July 29, 1994

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES
FOR BENZENE, TOLUENE, ETHYLBENZENE,
XYLENES, GASOLINE AND METHYL T-BUTYL ETHER

USING EPA METHODS 8020 AND 8015

Samples Processed Using Method 5030

Results Reported as $\mu\text{g/g}$ (ppm)

Quality Assurance

<u>Sample ID</u>	<u>Blank</u>	JC03-14-15 (Duplicate)
Analyte:		
Methyl t-Butyl Ether	<0.5	1.6
Gasoline	<1.0	370
Benzene	<0.02	4.8
Toluene	<0.02	23
Ethylbenzene	<0.02	7.3
Xylenes	<0.04	42
Internal Standard % Recovery	123%	121%

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: August 1, 1994
 Date Received: July 22, 1994
 Project: 1-2349-1, P+H Truck Stop
 Date Samples Extracted: July 29, 1994
 Date Extracts Analyzed: July 29, 1994

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES
 FOR BENZENE, TOLUENE, ETHYLBENZENE,
 XYLENES, GASOLINE AND METHYL T-BUTYL ETHER
 USING EPA METHODS 8020 AND 8015
 Samples Processed Using Method 5030
 Results Reported as % Recovery
 Quality Assurance

<u>Sample ID</u>	JC03-14-15 <u>Matrix Spike</u> % Recovery	JC03-14-15 <u>Matrix Spike Duplicate</u> % Recovery	<u>Spike</u> <u>Level</u>
Analyte:			
Methyl t-Butyl Ether	104%	124%	10
Gasoline	ai	ai	10
Benzene	ai	ai	1.0
Toluene	ai	ai	1.0
Ethylbenzene	ai	ai	1.0
Xylenes	ai	ai	2
Internal Standard % Recovery	113%	113%	

ai The amount spiked was insufficient to give meaningful recovery data.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: August 1, 1994

Date Received: July 22, 1994

Project: 1-2349-1, P+H Truck Stop

Date Samples Extracted: July 29, 1994

Date Extracts Analyzed: July 29, 1994

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES
FOR BENZENE, TOLUENE, ETHYLBENZENE,
XYLENES, GASOLINE AND METHYL T-BUTYL ETHER
USING EPA METHODS 8020 AND 8015
Samples Processed Using Method 5030
Results Reported as % Recovery
Quality Assurance

<u>Sample ID</u>	<u>Spike Blank</u> <u>% Recovery</u>	<u>Spike</u> <u>Level</u>
Analyte:		
Methyl t-Butyl Ether	na	10
Gasoline	100%	10
Benzene	na	1
Toluene	na	1
Ethylbenzene	na	1
Xylenes	na	2
Internal Standard % Recovery	134%	

na The analyte indicated was not added to the matrix spike sample.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: July 26, 1994
Date Received: July 22, 1994
Project: 1-2349-1, P+H Truck Stop
Date Samples Extracted: July 22, 1994

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES
FOR FINGERPRINT CHARACTERIZATION
BY CAPILLARY GAS CHROMATOGRAPHY
USING A FLAME IONIZATION DETECTOR (FID)
AND ELECTRON CAPTURE DETECTOR (ECD)

Sample ID

GC Characterization

JC01-19-21

The GC trace using the flame ionization detector (FID) and the GC electron capture detector (ECD) trace showed an absence of volatile and semi-volatile compounds. The detection limit for this analysis is 20, 50 and 100 ppm for gasoline, diesel and motor oil, respectively.

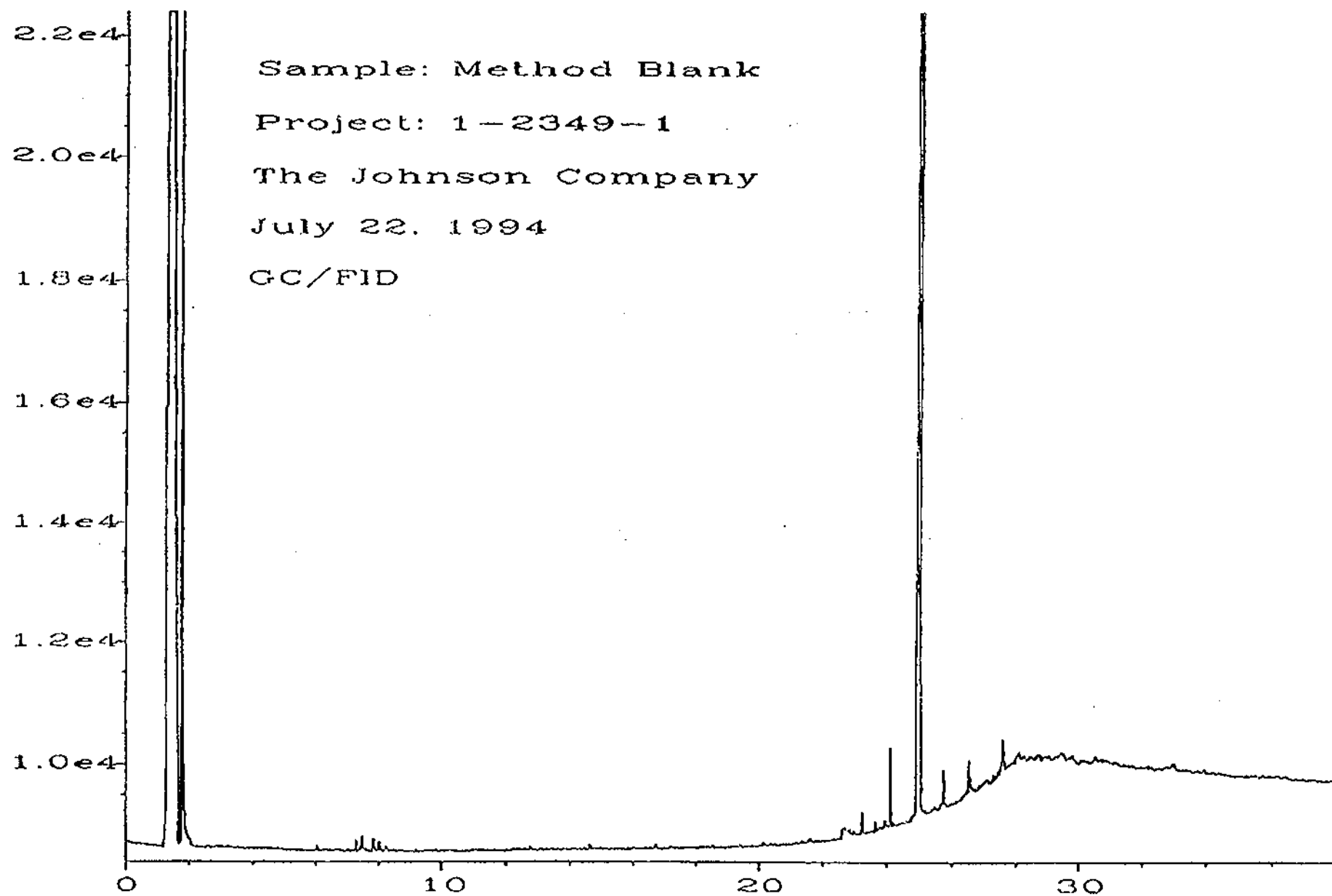
The large peak seen near 25 minutes on the GC/FID trace is pentacosane, added as a quality assurance check for this GC analysis.

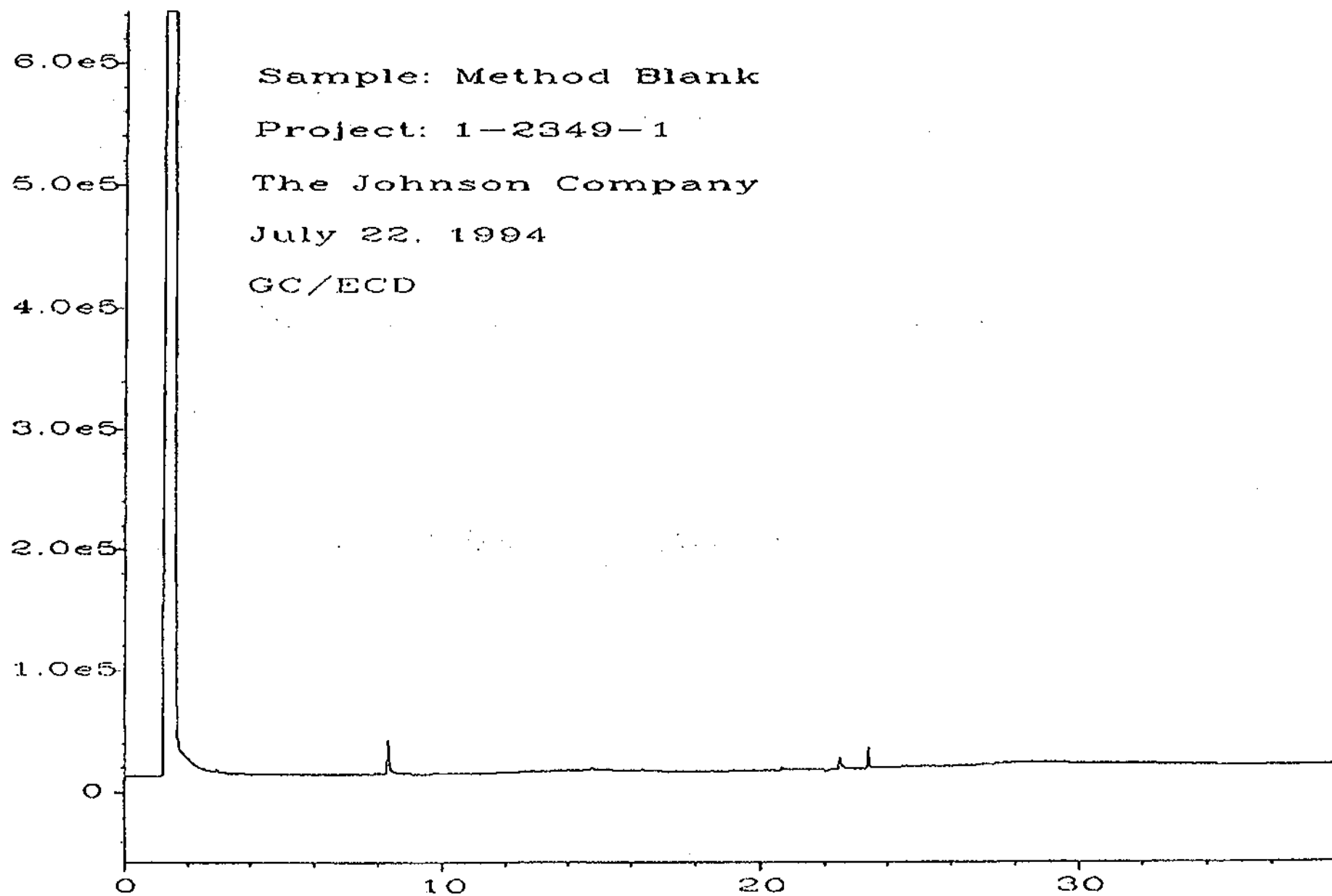
JC03-14-15

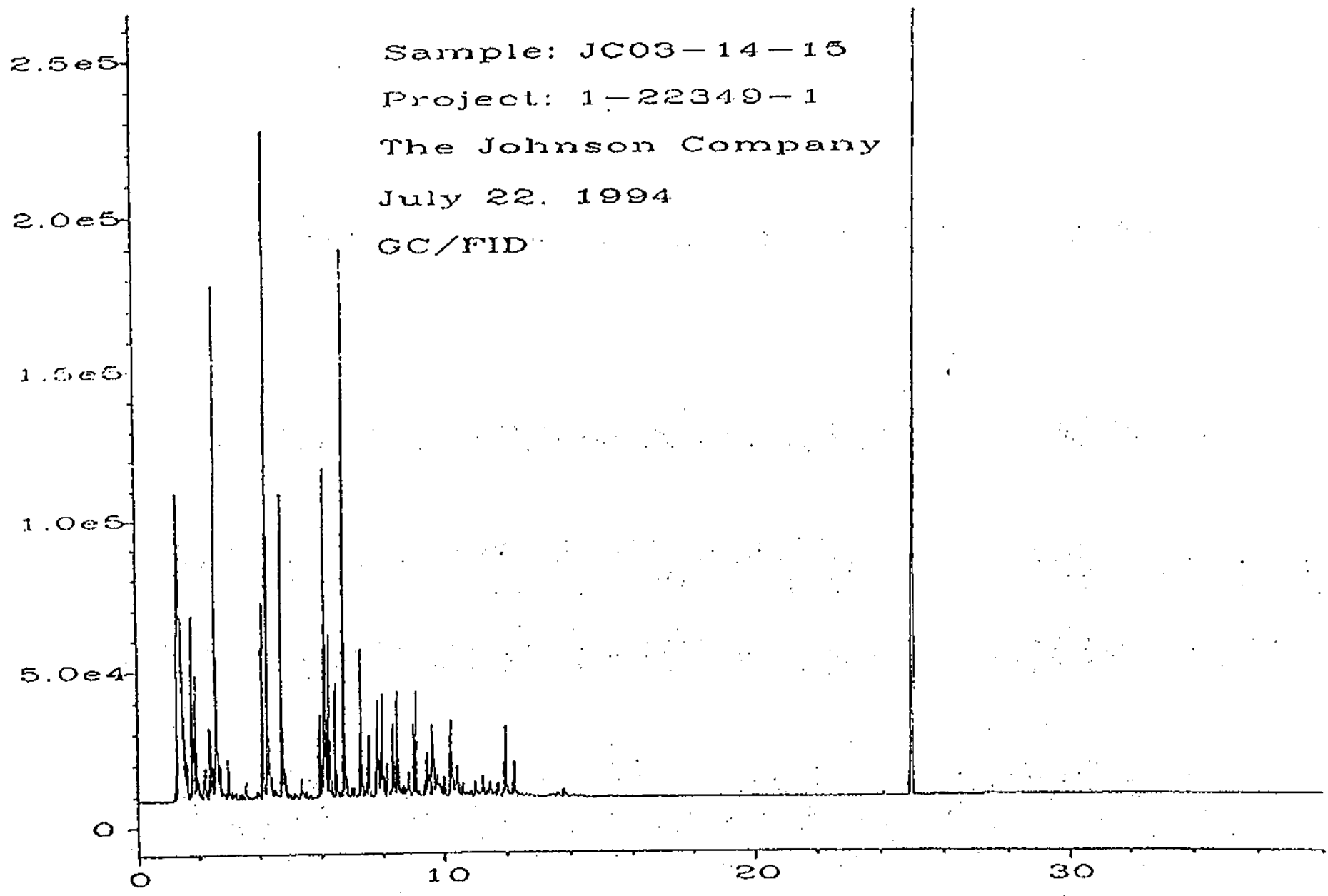
The GC trace using the flame ionization detector (FID) showed the presence of low boiling compounds. The patterns displayed by these peaks are indicative of gasoline.

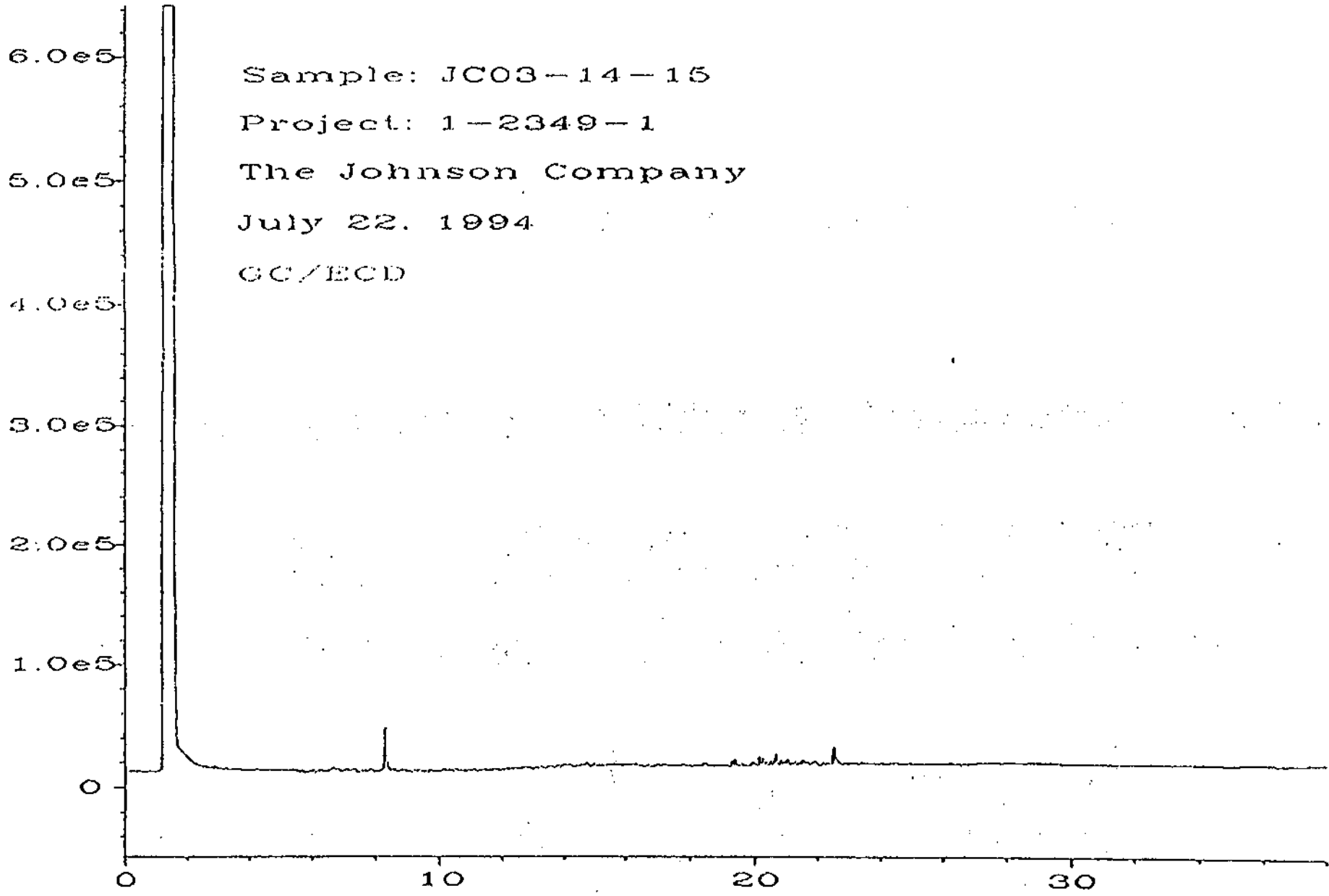
The low boiling compounds appeared as a ragged pattern of peaks eluting from n -C₆ to n -C₁₃ showing a maximum near n -C₈. The GC/FID trace showed the presence of peaks that appeared to be indicative of augmented levels of toluene, ethylbenzene, the xylenes and C₃-benzenes. These compounds are characteristic of the constituents commonly found in gasoline.

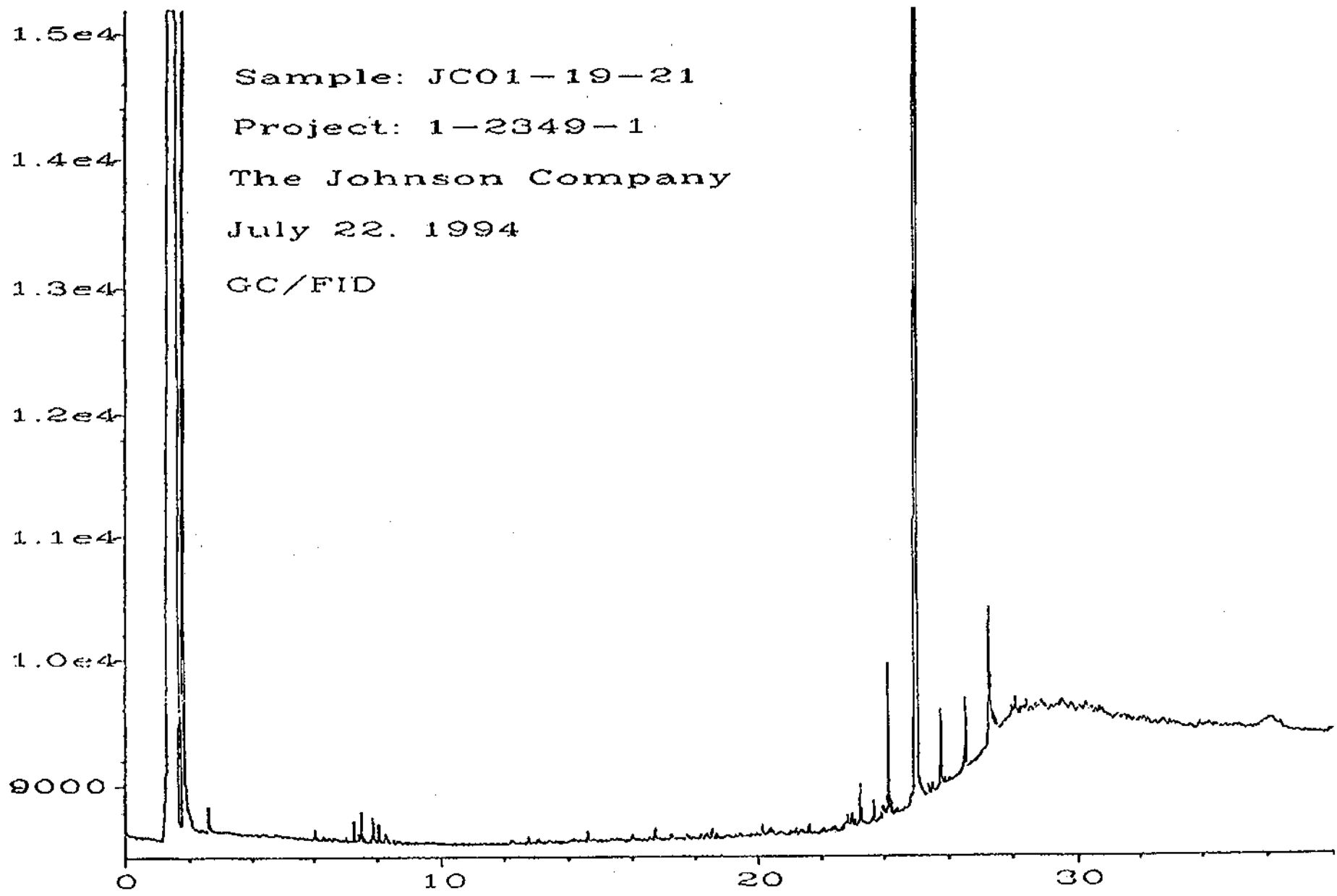
The large peak seen near 25 minutes on the GC/FID trace is pentacosane, added as a quality assurance check for this GC analysis.











C:\HPCHEM\1\DATA\07-22-94\064R1501.D

